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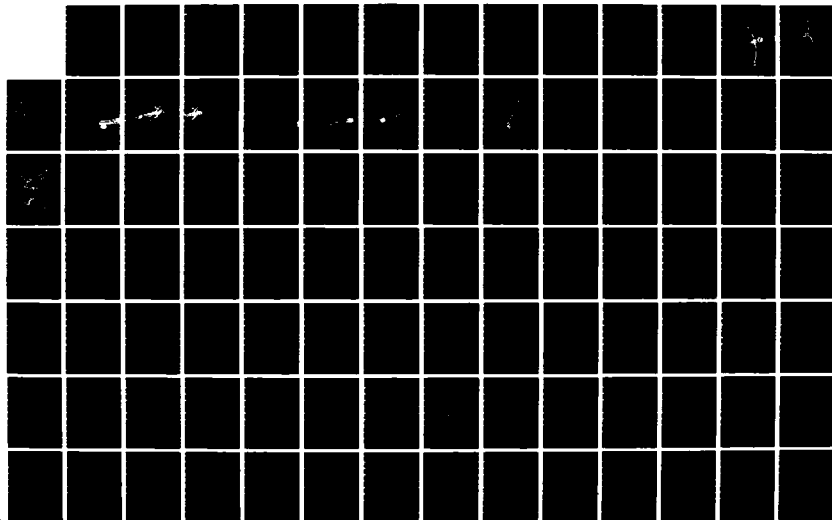
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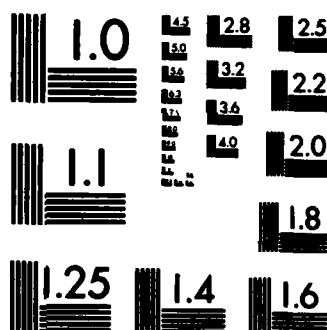
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PHASE ONE CULTURAL RESOURCE SURVEY OF PROPOSED TRUNK HIGHWAY 60 & 169
BRIDGE ALTERATIONS FOR U.S. ARMY CORPS OF ENGINEERS FLOOD CONTROL PROJECT
IN MANKATO, NORTH MANKATO AND LE HILLIER
IN BLUE EARTH AND NICOLLET COUNTIES, MINNESOTA

AD-A143 953

FINAL REPORT
6 October 1982

By: Leslie D. Peterson
Trunk Highway Archaeologist
Minnesota Historical Society
Fort Snelling History Center
St. Paul, Minnesota 55111

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For the State of Minnesota, Department of Transportation
under Agreement 55699 in partial fulfillment of contract:

DACW 37-80-C-0060
Mankato Flood Control Project
U.S. Army Corps of Engineers
St. Paul District

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A Phase 1 cultural resource survey of two proposed trunk highway bridge crossing modification projects in association with the Mankato Flood Control Project were conducted during August and October 1981. Study areas include the one-quarter mile relocation of the T.H. 60-Main Street bridge and approaches over the Minnesota River in Mankato and North Mankato and the three-quarter mile long minor realignment of the T.H. 169 bridges over the Blue Earth River and approaches in West Mankato and Le Hillier.		

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A literature search, records review, and an archeological survey, including surface reconnaissance and shovel test excavation were conducted. The literature search and survey resulted in the location of one archaeological site, 21 BE 63, within the study area. This site was located within the proposed right-of-way acquisition zone but is not directly affected by proposed highway approach construction. Preservation of this potentially eligible prehistoric stone tool manufacturing site within the proposed right-of-way is advised.

The original Mankato Townsite was also identified on the basis of literature research as a potentially sensitive area although it was inaccessible to subsurface testing due to modern urban development. No other archaeological resources were defined within the project study area, and no further cultural resource surveys were recommended.

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For the State of Minnesota, Department of Transportation
under Agreement 55699 in partial fulfillment of contract:

DACW 37-80-C-0060
Mankato Flood Control Project
U.S. Army Corps of Engineers
St. Paul District

ADMINISTRATIVE SUMMARY

During August and October 1981 staff of the Minnesota Trunk Highway Archaeological Reconnaissance Survey of the Minnesota Historical Society conducted a Phase I cultural resource survey of two proposed trunk highway bridge crossing modification projects in association with the Mankato Flood Control Project. Work was conducted under Minnesota Department of Transportation agreement 55699 with the Minnesota Historical Society and this report is submitted in partial fulfillment of U.S. Army Corps of Engineers contract DACW 37-80-C-0060. Study areas include the one-quarter mile relocation of the T.H. 60-Main Street bridge and approaches over the Minnesota River in Mankato and North Mankato (Alternative 1CA) and the three-quarter mile long minor realignment of the T.H. 169 bridges over the Blue Earth River and approaches in West Mankato and Le Hillier (Alternative 1C).

A literature search, records review, and an archaeological survey, including surface reconnaissance and shovel test excavation, were conducted by the author. Historic standing structures were not directly examined during the course of this survey due to a previous review of such data under a separate U.S. Army Corps of Engineers' contract and recent survey and ongoing review regarding architectural resources by the State Historic Preservation Office. The literature search and survey resulted in the location of one archaeological site, 21 BE 63, within the study area. This site was located within the proposed right-of-way acquisition zone but is not directly affected by proposed highway approach construction. Preservation of this potentially eligible prehistoric stone tool manufacturing site within the proposed right-of-way is advised.

The original Mankato Townsite was also identified on the basis of literature research as a potentially sensitive area although it was inaccessible to subsurface testing due to modern urban development. It is recommended that a plan for recovery of potential historical archaeological data which may remain undisturbed beneath modern features be considered during the course of ongoing negotiations with the State Historic Preservation Office. Due to recent alteration, this potential resource area does not appear to warrant "in situ" preservation.

No other archaeological resources were defined within the project study area, and no further cultural resource surveys were recommended.

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INTRODUCTION

During August and October 1981, phase one cultural resource surveys were conducted within the study areas defined for the proposed alteration of two highway bridge crossings at Mankato, Minnesota for completion of the U. S. Army Corps of Engineers Mankato Flood Control Project (Fig. 1). The study area includes the proposed land acquisition and construction zones for 1) the relocation of Trunk Highway 60 bridge #411 and approaches of the Minnesota River in Mankato and North Mankato as defined by Edwards and Kelsey, Inc., project consultants, as "Alternative 1CA" and 2) the relocation of Trunk Highway 169 bridges #4952 and #9413 (paired bridges of 4-lane divided highway crossing) and approaches over the Blue Earth River in Mankato and Le Hillier as defined by Edwards and Kelsey, Inc. as "Alternative 1C" (see Appendix "A" for Scope of Work).

The cultural resource survey of these two proposed highway bridge crossing sites was conducted by the author August 24-27, October 1-2, and October 27-28 under the auspices of the Minnesota Trunk Highway Archaeological Reconnaissance Survey, a cooperative program of the Minnesota Historical Society, Minnesota Department of Transportation and Federal Highway Administration, U.S. Department of Transportation under MnDOT agreement 55699. This report describing the cultural resource survey activities and its results was prepared wholly by the author and is submitted in partial fulfillment of U.S. Army Corps of Engineers contract DACW 37-80-C-0060 with the State of Minnesota, Minnesota Department of Transportation. Field records, project data, photographs, and archaeological specimens collected during the course of the investigation are stored at the Fort Snelling archaeological facility of the Minnesota Historical Society. These data are available for study by researchers upon request.

The two survey areas are located approximately two miles apart within the valley of the Minnesota River in the vicinity of Mankato, Minnesota. The proposed T.H. 60-Main Street bridge relocation is located in the SW $\frac{1}{4}$ Section 7, T108N, R26W in Mankato (Blue Earth County) and North Mankato (Nicollet County). Alternative 1CA currently under

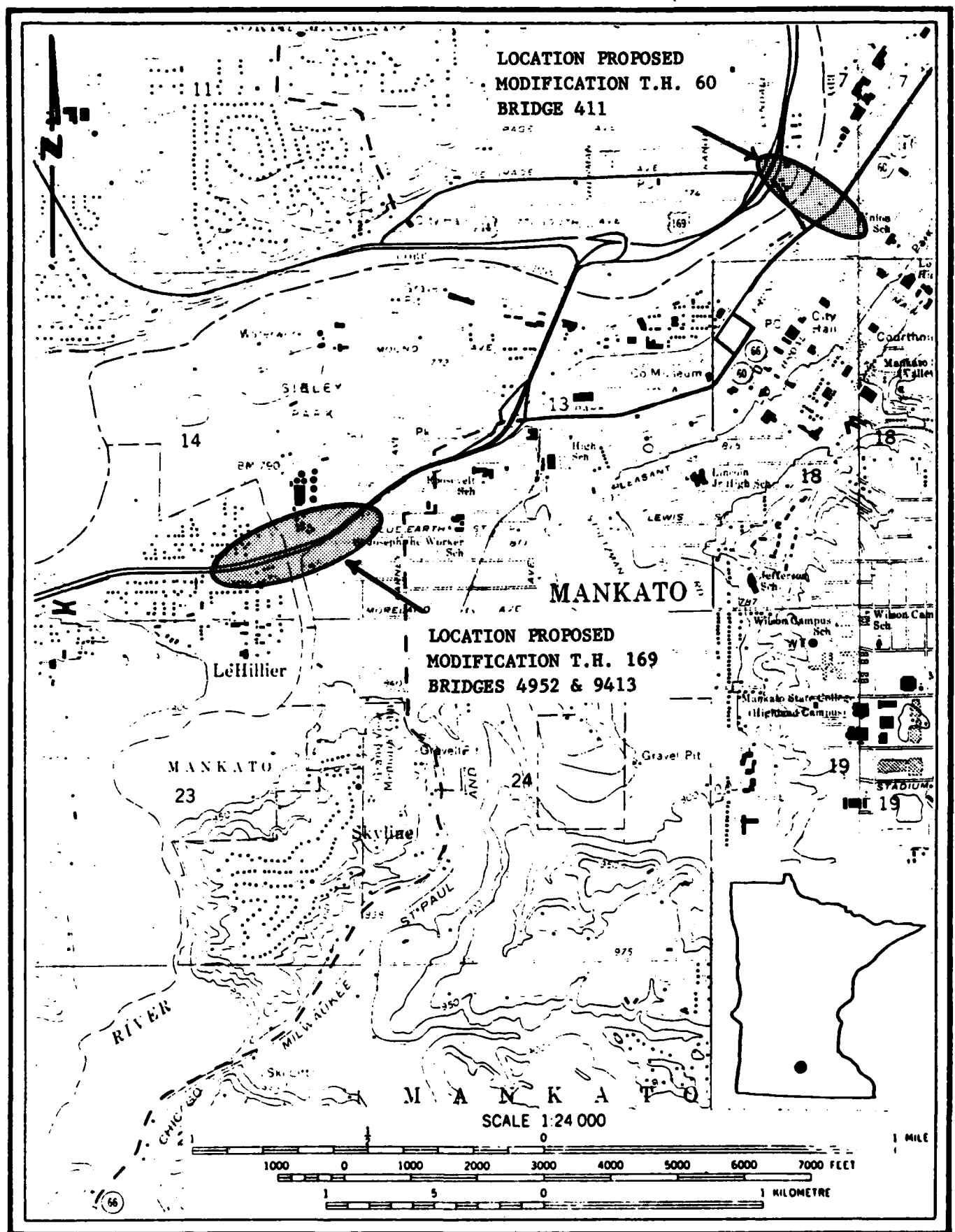
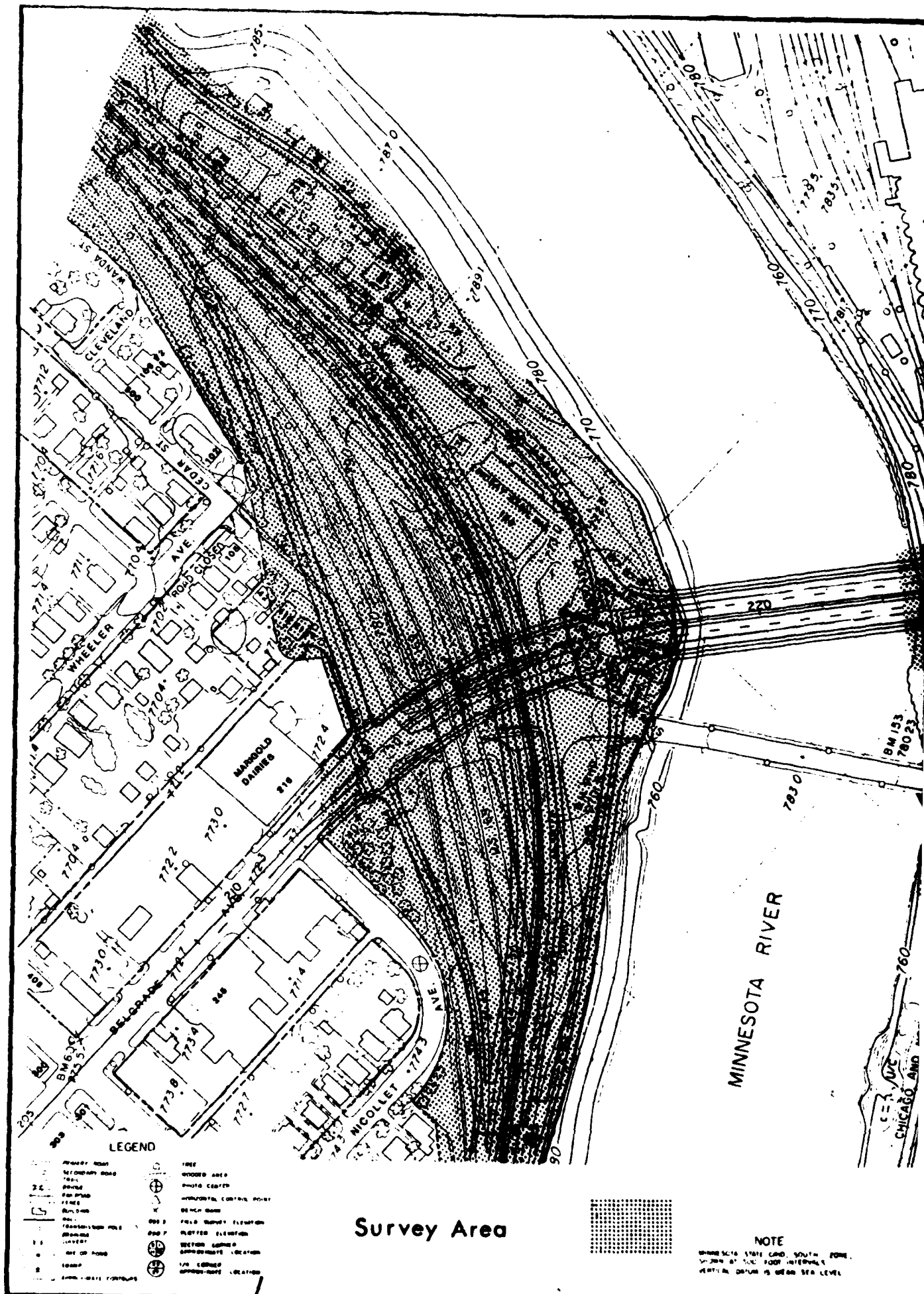


Figure 1. General location of Mankato Flood Control highway bridge modification study areas. (Mankato West and Mankato East U.S.G.S. 7.5' quadrangles)

study calls for the relocation of the 500-foot long T.H. 60 bridge over the Minnesota River approximately 250 feet (80 meters) northeasterly with associated realignment of the T.H. 60 and T.H. 169 approaches on the west bank and relocation of T.H. 60 and city street approaches on the east bank (Fig. 2). The average corridor width is ca. 175 feet (53 meters) although approaches extend beyond that limit at intersections. This project transects a commercial urban locality on the east bank of the Minnesota River and a mixed commercial and residential locality on the west bank.

The proposed Trunk Highway 169 Blue Earth River crossing relocation is located in the NW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$ Section 14, T108N, R27W in Mankato and Le Hillier in Blue Earth County. Alternative 1C calls for the relocation of the north bound and south bound bridges approximately 100 feet (30 meters) southerly with associated T.H. 169 approach revisions extending 1800 feet (550 meters) easterly (Fig. 3) and 1200 feet (365 meters) westerly (Fig. 4). The average corridor width is ca. 220 feet (67 meters) although proposed frontage and interchange revisions extend beyond that limit in several locations. The area affected by the proposed alignment is composed of developed mixed commercial and residential lands.

Both project areas are included within the limits of the Mankato West 7.5' Quadrangle of the U.S.G.S. Topographic map series (1:24000 scale).



LEGEND

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| — | PRIMARY ROAD | ⊙ | TREE |
| - - - | SECONDARY ROAD | ⊗ | WOODED AREA |
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| ⊙ | POUND | ⊗ | HYDROGRAPHIC CONTROL POINT |
| ⊙ | FOR POND | ⊕ | DE MEYER MARK |
| ⊙ | WELL | ⊗ | FIELD SURVEY ELEVATION |
| ⊙ | WELL | ⊕ | PLATTED ELEVATION |
| ⊙ | WELL | ⊗ | SECTION CORNER |
| ⊙ | WELL | ⊕ | APPROXIMATE LOCATION |
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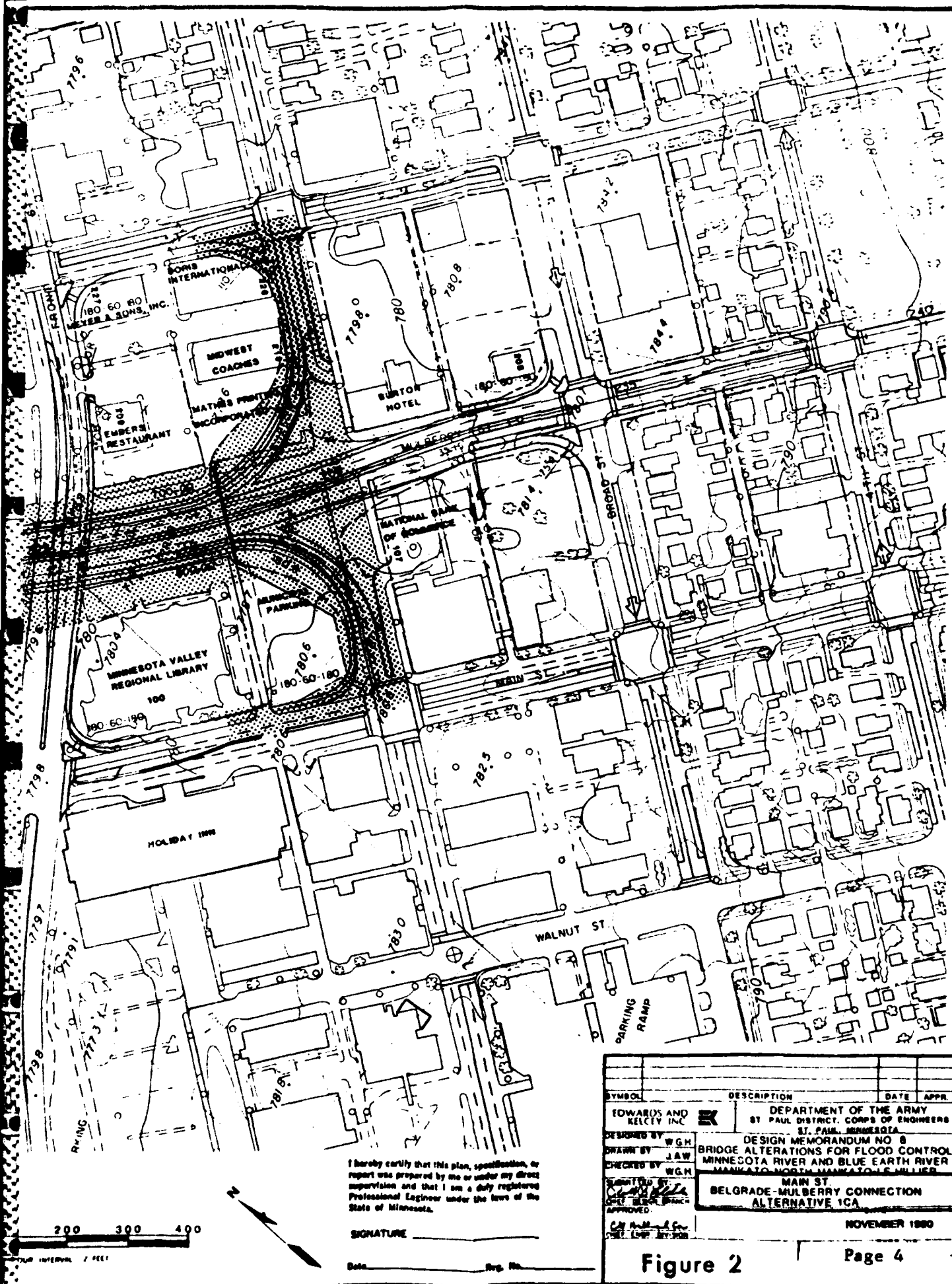
Survey Area

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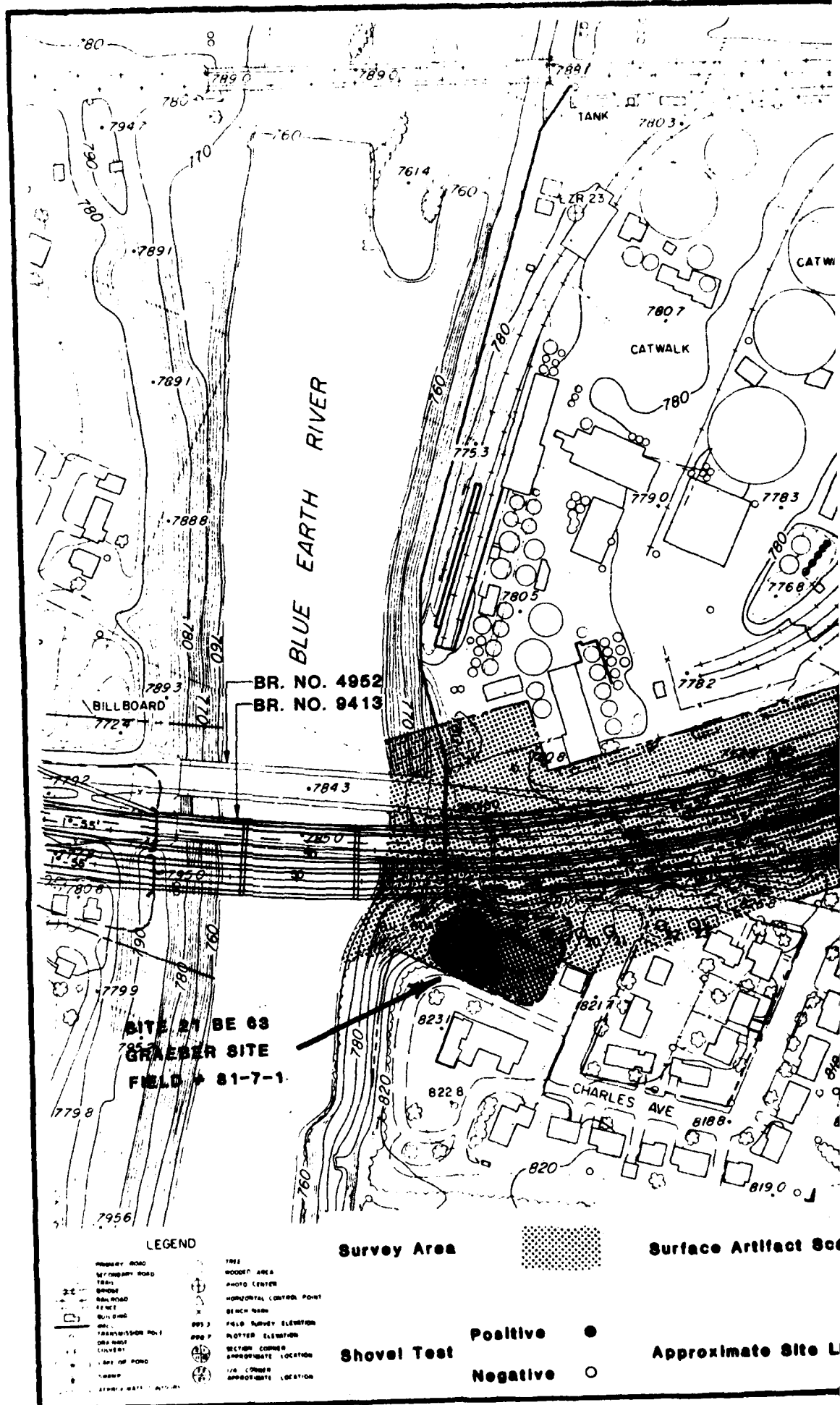


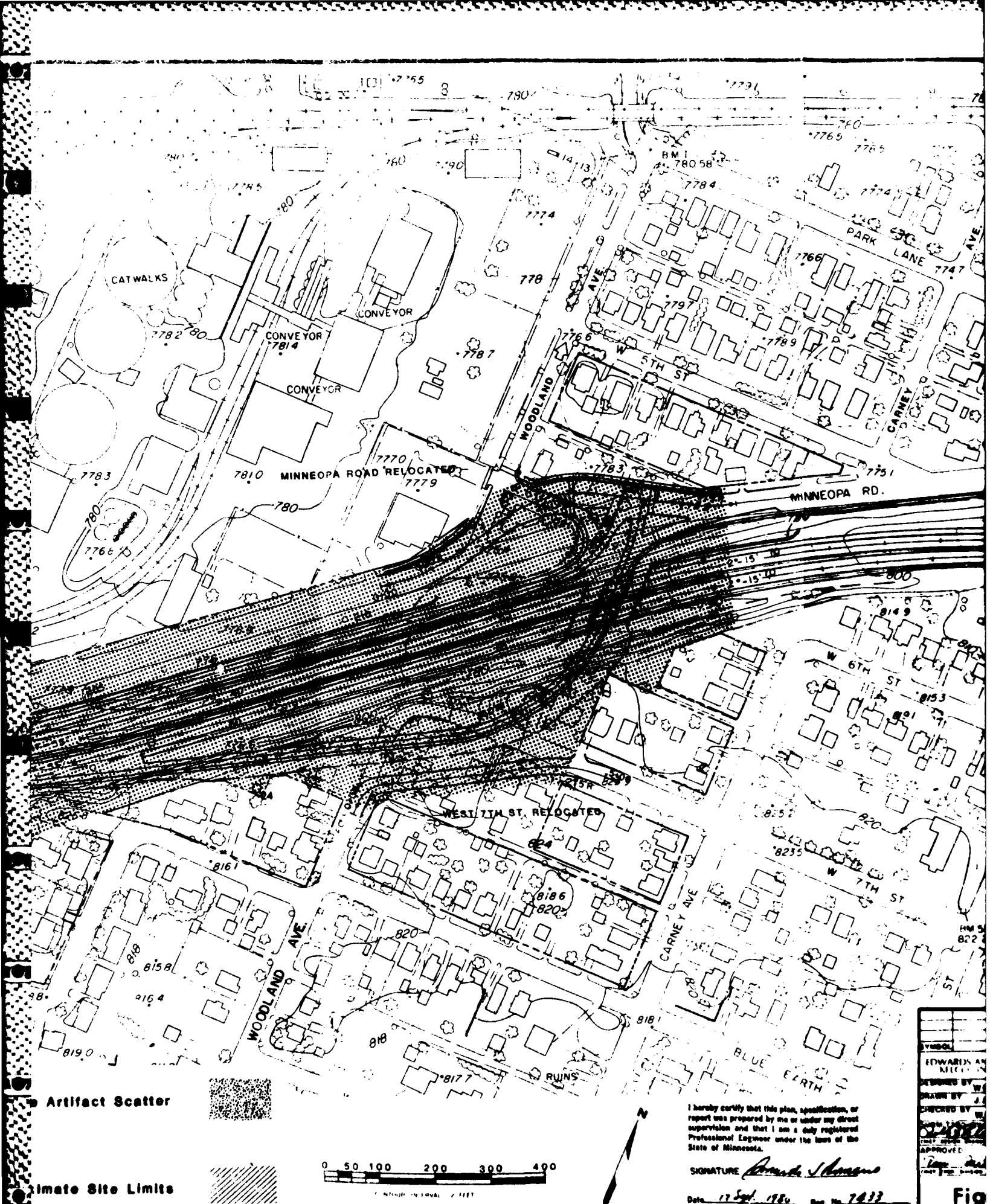
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DESIGNED BY W.G.H.	DESIGN MEMORANDUM NO. 8		
DRAWN BY J.A.W.	BRIDGE ALTERATIONS FOR FLOOD CONTROL		
CHECKED BY W.G.H.	MINNESOTA RIVER AND BLUE EARTH RIVER		
SUBMITTED BY	MAIN ST.		
APPROVED	BELGRADE-MULBERRY CONNECTION		
	ALTERNATIVE 1CA		
		NOVEMBER 1980	

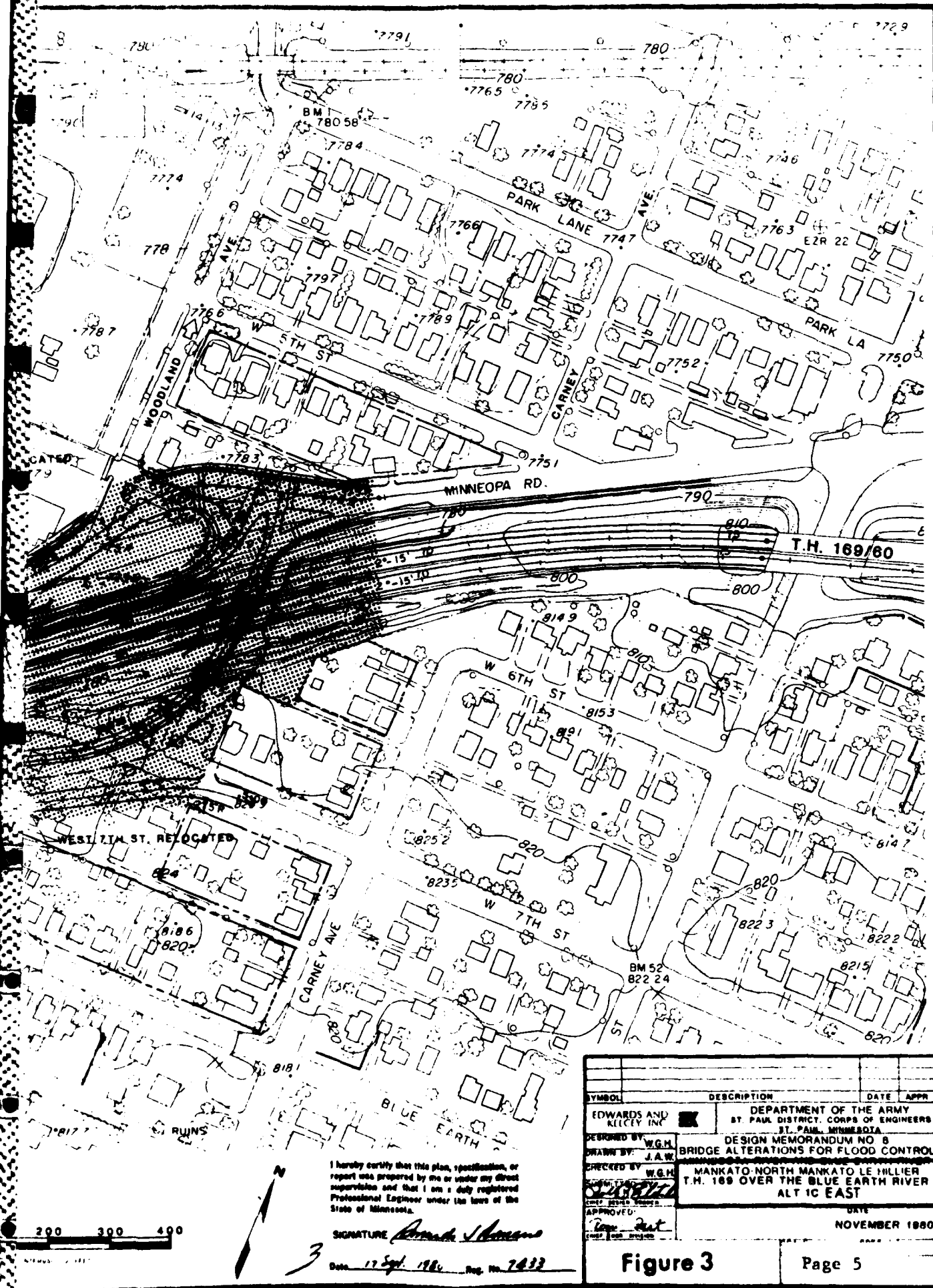
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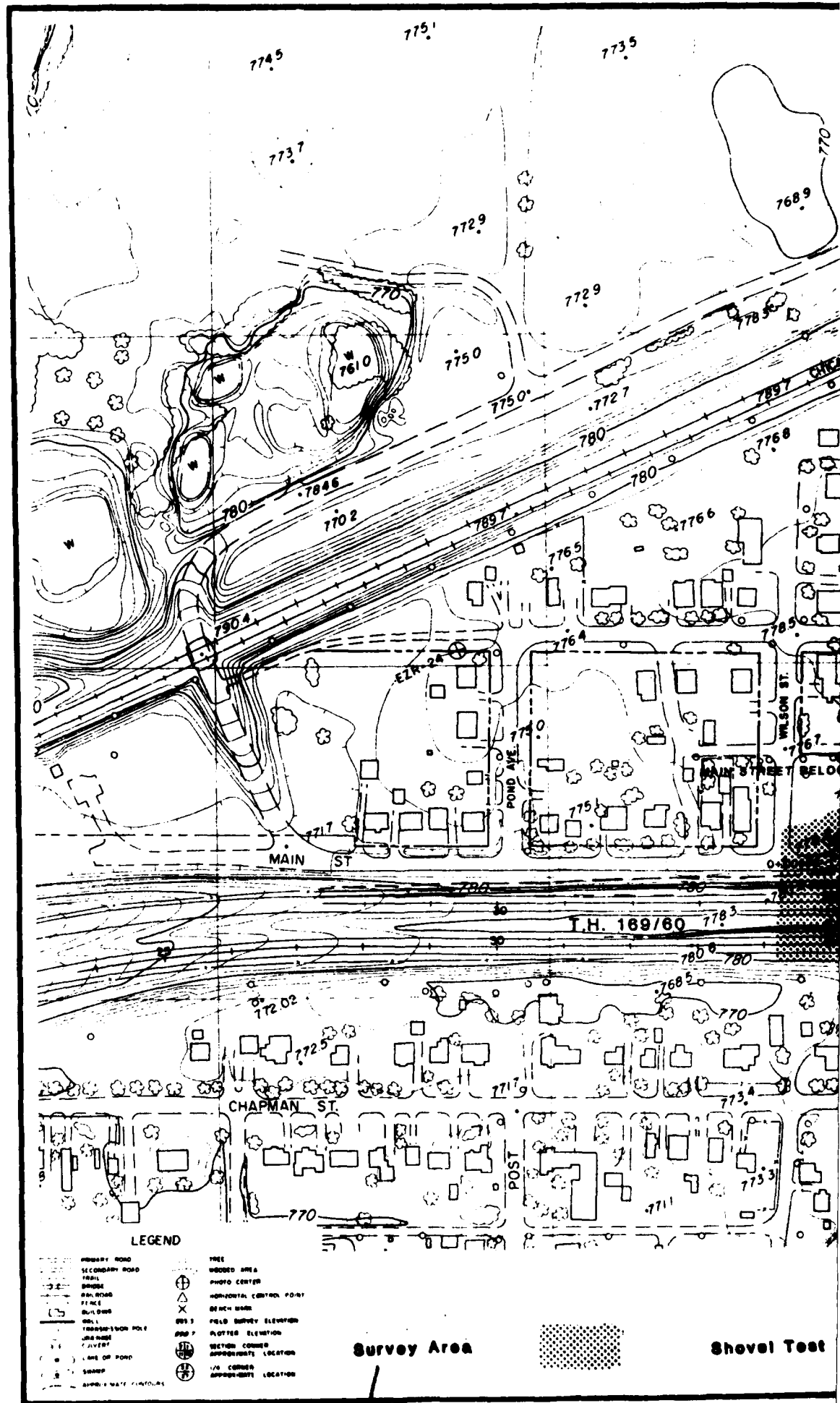
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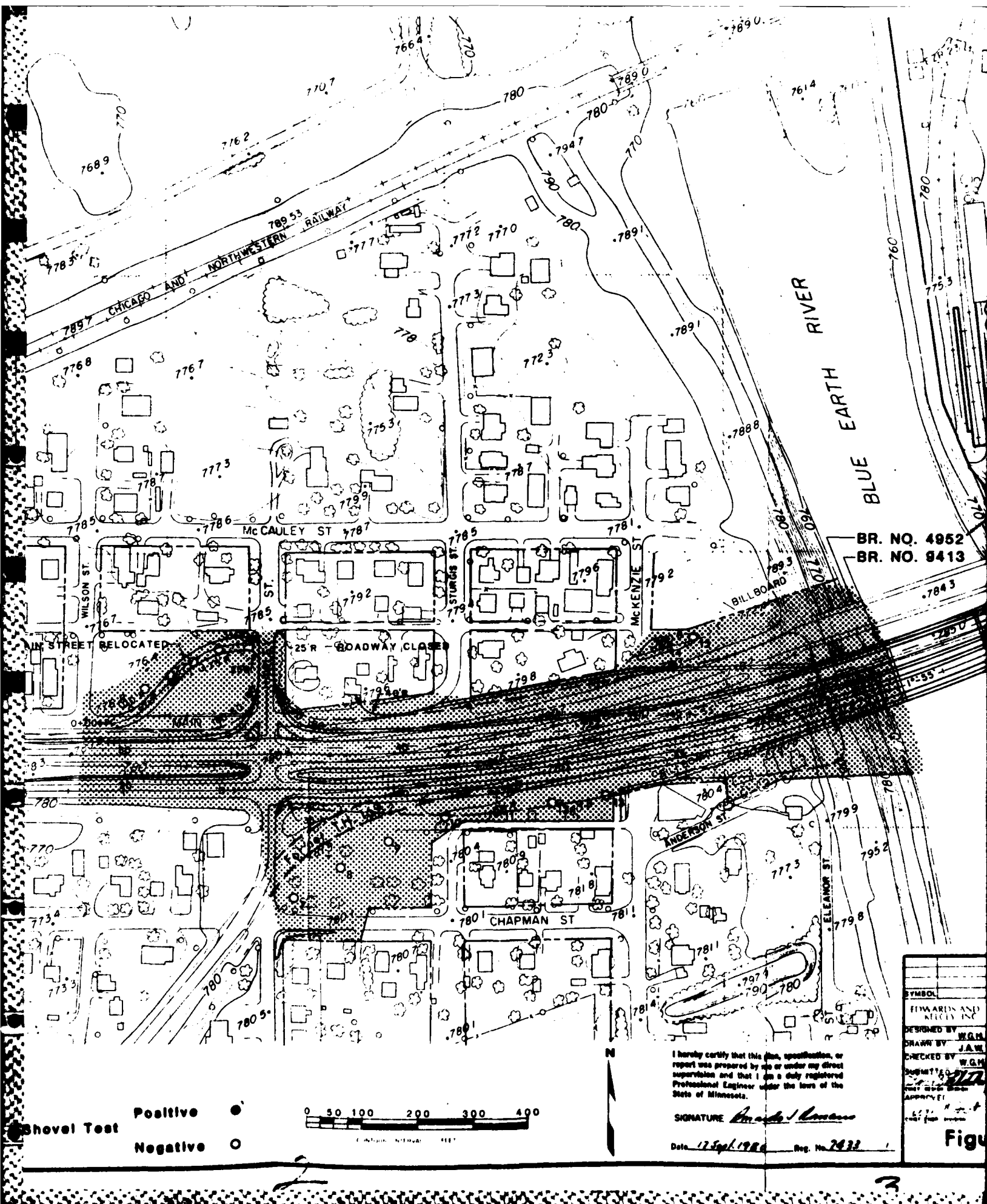
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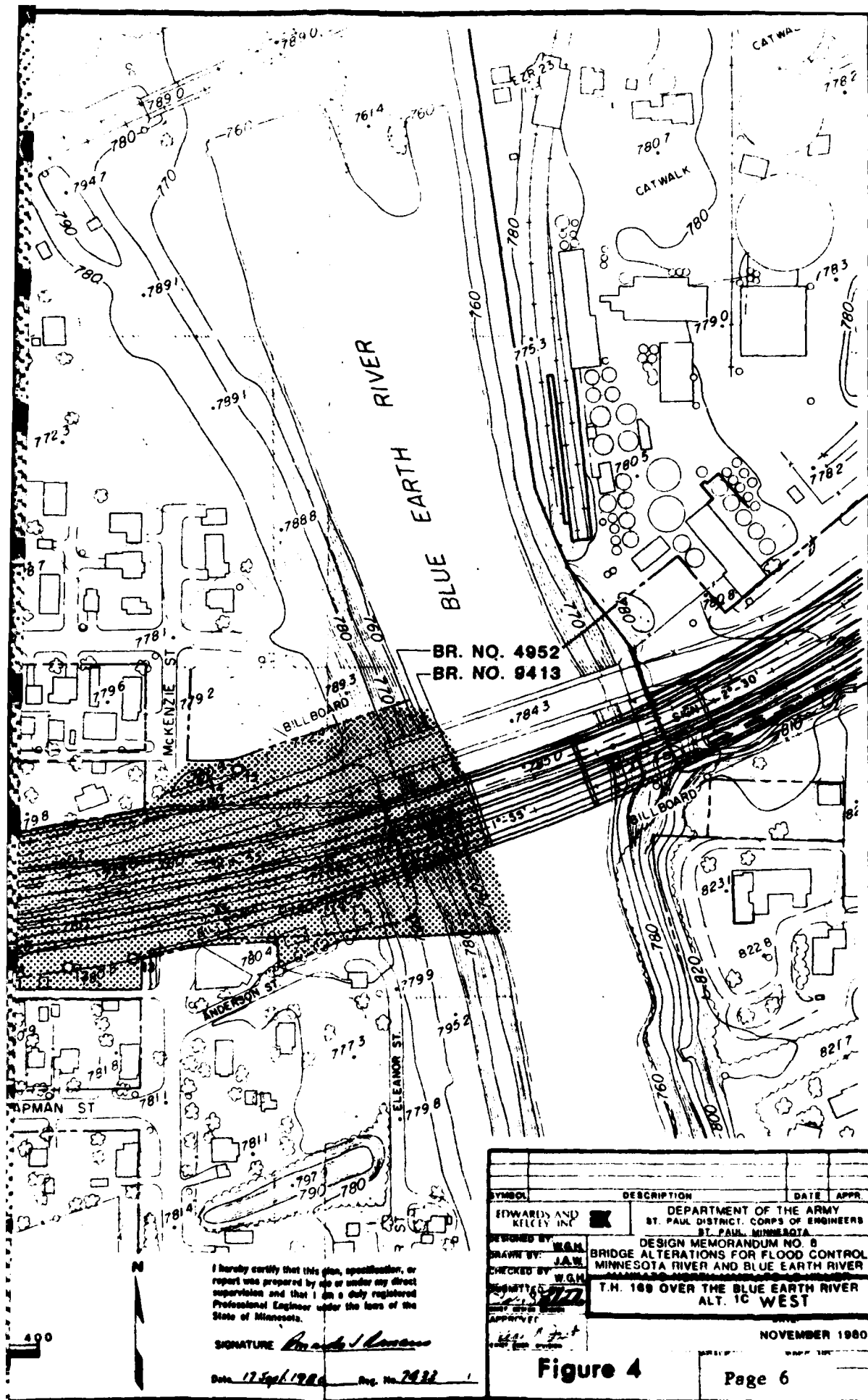


SYMBOL	DESCRIPTION	DATE	APPR
EDWARDS AND KELCEY INC.	DEPARTMENT OF THE ARMY ST. PAUL DISTRICT, CORPS OF ENGINEERS ST. PAUL, MINNESOTA		
DESIGNED BY: W.G.H.	DESIGN MEMORANDUM NO. 8		
DRAWN BY: J.A.W.	BRIDGE ALTERATIONS FOR FLOOD CONTROL		
CHECKED BY: W.G.H.	MANKATO-NORTH MANKATO LE HILLIER T.H. 169 OVER THE BLUE EARTH RIVER ALT 1C EAST		
APPROVED: <i>Tom</i>	DATE NOVEMBER 1960		

Figure 3







ENVIRONMENTAL SETTING

Bedrock Geology

The bedrock geology of the Mankato region in south-central Minnesota is complex, reflecting the action of varying geologic forces over the last 600 million years. Although the region is underlain by igneous sedimentary and metamorphic rocks of Precambrian age (Craddock 1972) between 600 million and 4 billion years old, these deposits are deeply buried in the Mankato area and the closest surface exposure is 25 miles northwest in the bottom of the Minnesota River Valley. The major bedrock outcrops in the study area date to the Cambrian and Ordovician periods at the beginning of the Paleozoic Era ca. 600-400 million years ago. In the Mankato area the bedrock, which is generally buried beneath a thick mantle of glacial drift and only exposed in major stream valleys, is composed primarily of 90 to 120-foot thick beds of white-to-yellow quartzose sandstones of the Jordan formation of Upper Cambrian age overlain by 30-40 feet of thin-to-thick bedded, brownish-gray-to-buff, fine-to-medium grained Lower Ordovician Oneota dolomite (Fig. 5). These early Paleozoic bedrock deposits are locally variable, however, since they represent near shore facies at the western margin of the Paleozoic sea which deposited them (Austin 1972:459). Small amounts of cretaceous clays and shales deposited over some areas of the Paleozoic sandstones and dolomites ca. 100,000 years ago in the western segment of the Mankato area form the last phase of bedrock deposition in the study area.

Pleistocene Geology

Although four billion years of geological processes contributed to the formation of the landforms of southern Minnesota, the visible surface features of the landscape were formed during the course of the repeated advance and retreat of continental ice sheets during the Pleistocene period which lasted from approximately 2 million until 10,000 B.P. Although glacial ice sheets advanced and retreated across Minnesota several times during the Pleistocene, the present landforms and soils of south-central Minnesota are primarily a reflection of only the effects of the last major glaciation, the Wisconsin, which lasted from approximately 40,000 to 10,000 B.P. Within

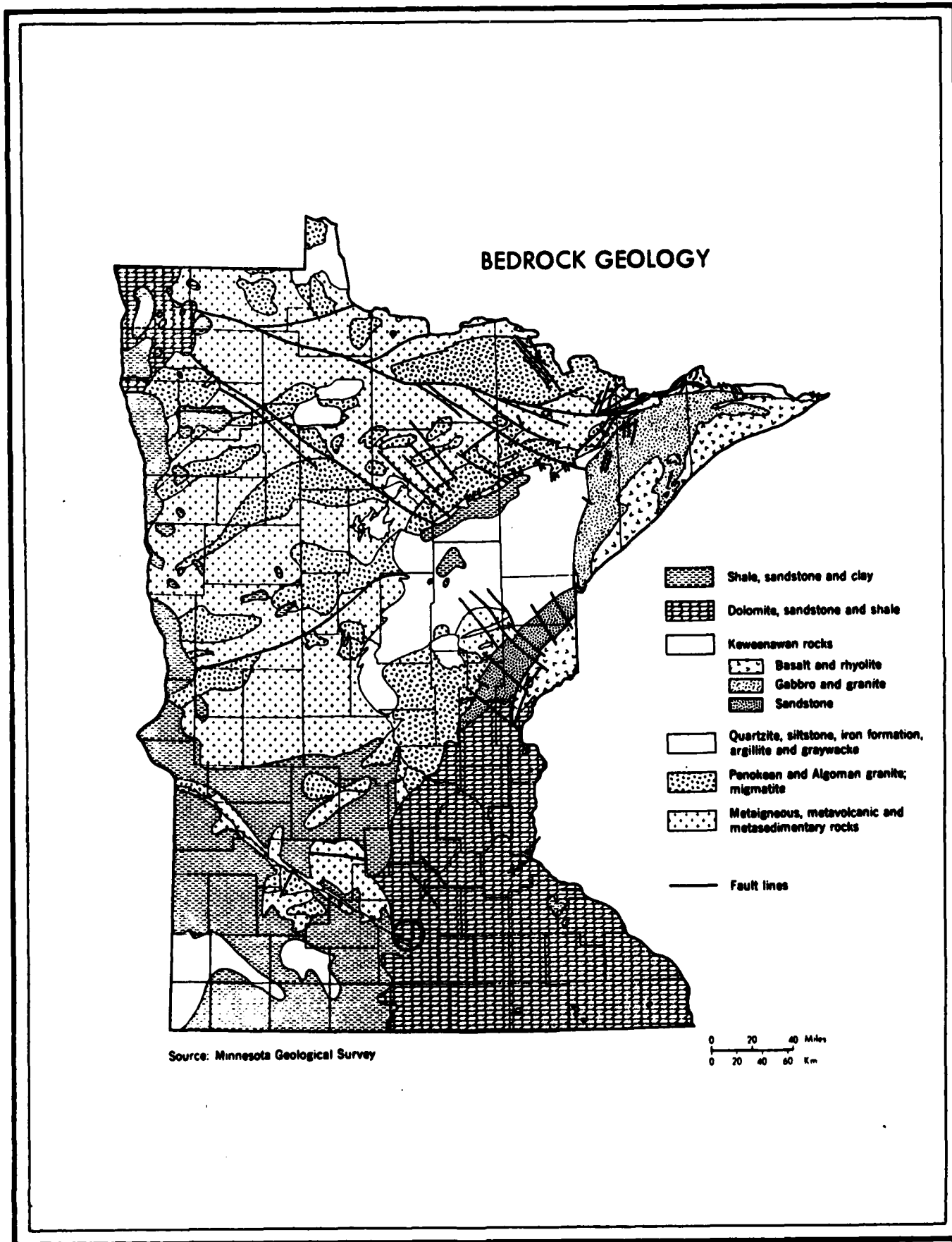


Figure 5. Bedrock geology of Minnesota (from Borchert and Gustafson 1980)

the Wisconsin glaciation, the history of the Des Moines Lobe of the Wisconsin ice sheet near the close of the Pleistocene is of primary interest here since it was directly responsible for the formation of the extant landscape of south-central Minnesota.

As the continental ice sheet advanced across Minnesota for the last time during the New Ulm Phase of the late Wisconsin glaciation, it entered from the northwest, generally following the lowlands of the present Red River Valley and the Minnesota River Valley reaching the vicinity of present day Mankato by about 16,000 B.P. (Wright 1972a:540). As the advancing ice sheet thickened, it climbed out of the Minnesota Valley and flowed south down the Des Moines River Valley reaching its maximum southern limits near the present location of Des Moines, Iowa (Fig. 6) about 14,000 years ago (Wright 1972a:540). After 14,000 B.P., the Des Moines Lobe retreated from its maximum limits leaving southern Minnesota ice free by about 13,000 B.P. (Wright and Ruhe 1965). This last glacial episode left a lasting legacy in the form of thick till plains; undulating lateral, end, and recessional moraines; and the pronounced erosional features which resulted from the runoff of glacial meltwaters.

The relief of the Mankato area is predominantly a product of the final wasting of continental ice at the close of the Pleistocene and subsequent erosion in the 12,000 years since its retreat. Most of south-central Minnesota lies within the nearly level, gently undulating Blue Earth till plain (Fig. 7) with upland elevations of about 1000 feet above sea level. In this area, glacial till 100 to 200 feet thick generally masks the effects of bedrock relief except in the deeply eroded channels of major streams. The channels of the Blue Earth, Le Sueur, and Maple rivers formed during and immediately after the retreat of the Des Moines Lobe ice as meltwaters scoured deep gorges through the till deposits. For a short time, a large area of south-central Minnesota was covered by the meltwaters dammed by the retreating ice front and till clogged drainageways which formed Glacial Lake Minnesota as defined by the lacustrine clays deposited by its waters (USDA 1978:209).

The broad valley of the Minnesota in which the entire project study area is contained was scoured out by glacial meltwaters through till and bedrock as the Pleistocene came to a close. As the Des Moines Lobe

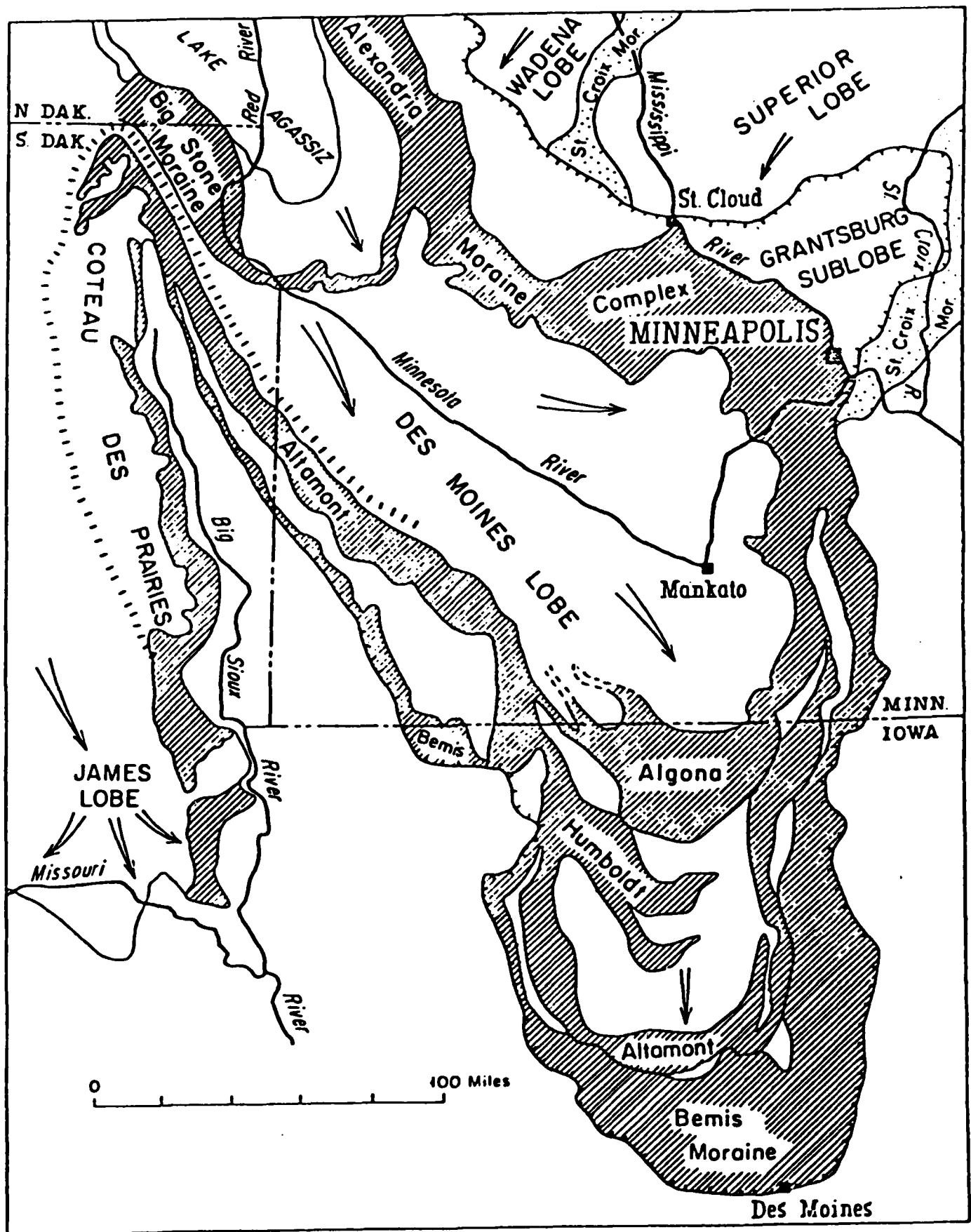
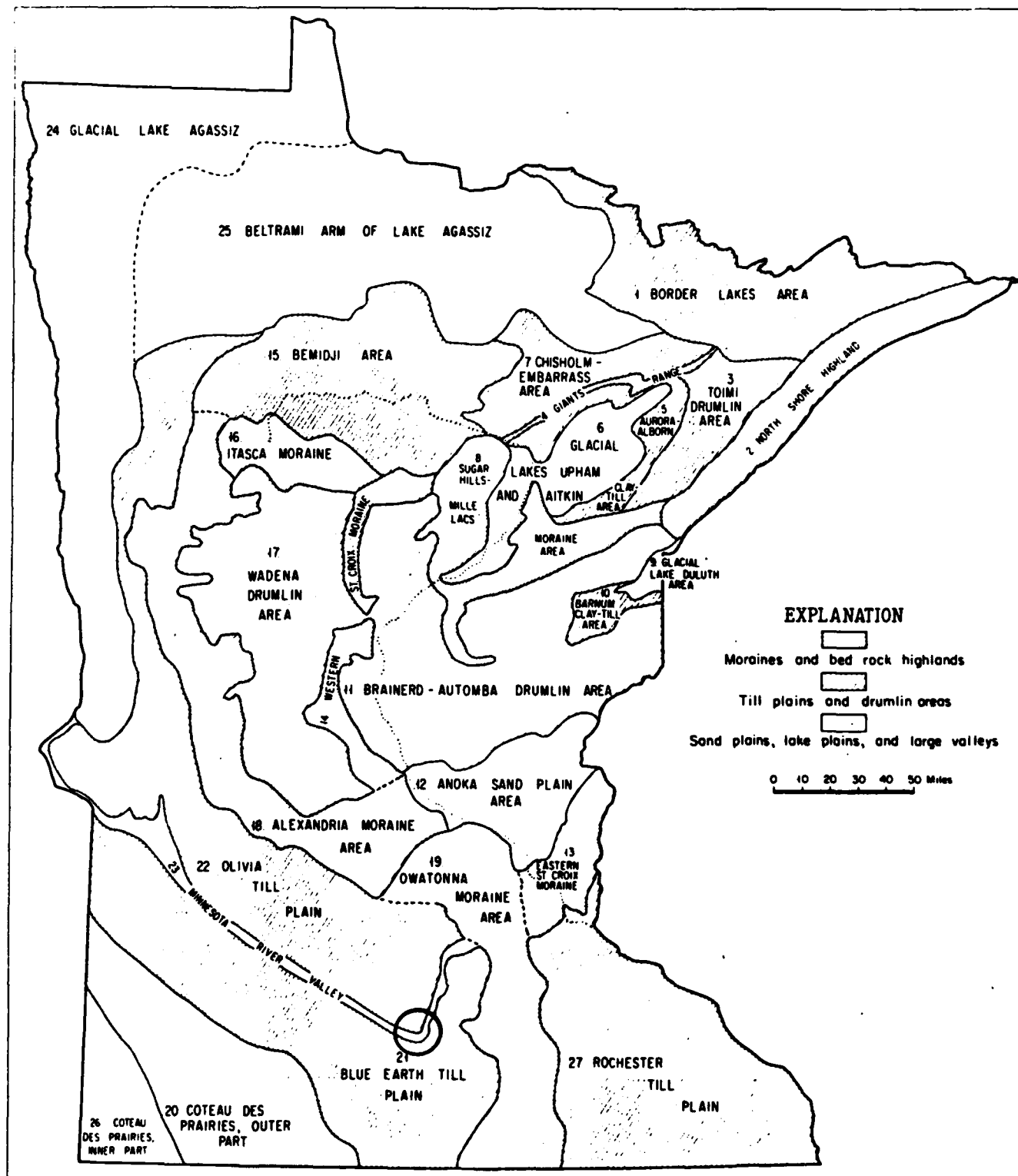


Figure 6. Maximum extent of the Des Moines Lobe of the Late Wisconsin glaciation (from Wright 1972b).



Map of physiographic areas in Minnesota. 1. border lakes area; 2. North Shore Highland; 3. Toimi drumlin area; 4. Giants range; 5. Aurora-Alborn clay-till area; 6. Glacial Lakes Upham and Aitkin; 7. Chisholm-Embarrass area; 8. Sugar Hills-Mille Lacs area; 9. Glacial Lake Duluth area; 10. Barnum clay-till area; 11. Brainerd-Automba drumlin area; 12. Anoka sandplain area; 13. eastern St. Croix moraine; 14. western St. Croix moraine; 15. Bemidji area; 16. Itasca moraine; 17. Wadena drumlin area; 18. Alexandria moraine area; 19. Owatonna moraine area; 20. Coteau des Prairies, outer part; 21. Blue Earth till plain; 22. Olivia till plain; 23. Minnesota River Valley; 24. Glacial Lake Agassiz; 25. Beltrami arm of Lake Agassiz; 26. Coteau des Prairies, inner part; 27. Rochester till plain.

Figure 7. Map of physiographic areas of Minnesota (from Wright 1972a:564).

retreated past the Big Stone Moraine near present-day Browns Valley about 12,000 B.P., meltwater was dammed between the ice front and the moraine to form Glacial Lake Agassiz. As the ice front withdrew northward, the proglacial lake expanded, eventually covering nearly 200,000 square miles of Minnesota, the Dakotas, and Canada. Meltwater accumulated until it reached sufficient height to flow south across the moraine at Browns Valley, forming the Glacial River Warren which cut the two-mile wide channel now occupied by the Minnesota River. Glacial Lake Agassiz continued to pour meltwater through the River Warren channel through a series of erosional down-cutting phases at its outlet (Wright 1972a, Matsch and Wright 1967). By ca. 9,200 \pm 600 years ago (Wright 1972a:544) the southern outlet of Lake Agassiz was abandoned when the continued retreat of the ice front opened lower northern outlets for the meltwater. During the two to three thousand years in which the Glacial River Warren drained Lake Agassiz, the Minnesota River Valley was cut into a steep sided, V-shaped valley up to four hundred feet deep with an elaborate series of erosional terraces, alluvial terraces and deltas. Following the abandonment of the southern Lake Agassiz outlet, however, the reduced flow of the underfit Minnesota River meanders across its broad, level, alluvial bottomlands amid the steep River Warren Valley walls and elevated erosional and depositional terraces upon which the project study area is situated.

Holocene Environments

As southern Minnesota became ice-free at the close of the Pleistocene, the region was invaded by boreal spruce forest by about 12,700 B.P. (Jelgersma 1962) which gradually gave way to a mixed deciduous forest by about 10,000 B.P. (Wright 1968). Continued warming and drying of the early Holocene climate caused a northward spread of prairie vegetation with evidence of prairie communities in northern Iowa by ca. 9,000 B.P. (Baker and Van Zant 1980) and nearly 75 miles northeast of the current prairie border in east central Minnesota by ca. 7,100 B.P. (Watts and Winter 1966). This warming trend which caused the spread of prairie vegetation across south-central Minnesota by about 8,000 B.P. subsequently reversed, as evidenced by the recession of the grasslands, to approximately their present limits. As the prairies receded, savannahs and woodlands dominated by oak

expanded across the eastern one-half of south-central Minnesota after 4,000 years ago. This oak-dominated woodland persisted until approximately 300 years ago when an increase in the populations of elm, maple, and basswood in the forest zone created the historically documented "Big Woods" of central and southeastern Minnesota (Grimm 1981:142).

As succinctly summarized by Wright (1974:11), "The simplest paleo-climatic interpretation of the post-glacial pollen sequence for the western Great Lakes area calls for relatively rapid warming and drying to a maximum about 7,000 years ago, followed by a leveling out for a thousand years, and then a more gradual reversal back to the climatic level of about 9,000 years ago."

A reconstruction of the vegetation of Minnesota prior to alteration by nineteenth and twentieth century settlement and agriculture, on the basis of mid-nineteenth century land survey notes (Marschner 1930), indicates that the project area is situated at the boundary between the deciduous "Big Woods" and the "Prairie" (Fig. 8). During the historic period, the project area within the valleys of the Minnesota and Blue Earth rivers contained river bottom forests dominated by elm, ash, and cottonwood. The uplands to the east were covered by the deciduous forest species of the "Big Woods" dominated by oak, elm, basswood, and ironwood, while uplands west of the project area contained prairie vegetation.

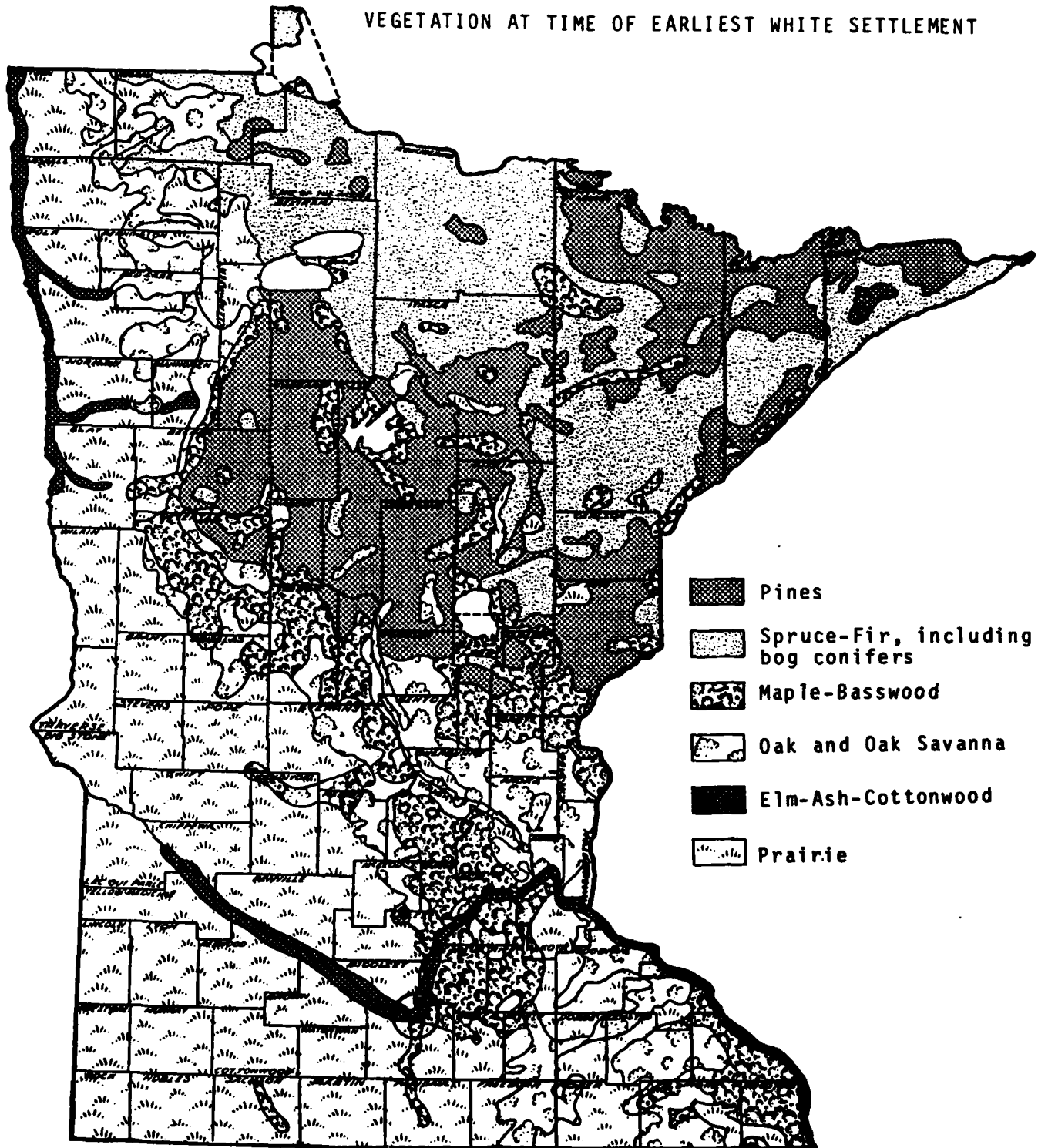
A review of the local vegetation recorded in the 1855 Government Land Survey notes reveals that the project area was actually a mosaic of deciduous woodlands with some prairie openings.

Present Environment

The study area has a cool, humid continental climate with warm summers and cold winters. The mean annual temperature is 46°F (8°C) and the mean annual precipitation is approximately 29 inches (74 cm).

As noted above, the regional physiography consists of the gently undulating clay till plains of the Wells-Rush River Ground Moraine Geomorphic Area (Minnesota Soil Atlas 1980) although the project study area is confined to the terraces within the Minnesota River Valley which transects the upland zone. The proposed project involves the steep trenches and banks of the Minnesota and Blue Earth rivers which have a normal elevation of

VEGETATION AT TIME OF EARLIEST WHITE SETTLEMENT



from USDA-SCS 1965 map after F. J. Marschner, USDA, 1930

Figure 8. Vegetation at the time of earliest white settlement (from Borchert and Yaeger 1968:10).

approximately 760 feet above sea level as well as two terraces within the Minnesota Valley. These terraces consist of an eroded bedrock terrace of presumed Late Pleistocene origin at an elevation of approximately 820 feet above sea level and an alluvial terrace of Late Pleistocene-Early Holocene date at an elevation of approximately 780 feet above sea level.

The soils of the study area are primarily Mollisols which formed under a grassland environment or transitional Alfisols Mollisols which indicate the combined influences of forest and grassland vegetation (USDA 1975). The soils of the alluvial terraces belong to the Chaska and Dorchester series and consist of calcareous silts and loams formed in recent alluvium. The soils on the upper bedrock terrace belong to the Copaston series and consist of a dark loam directly overlying outcrops of sedimentary bedrock (USDA 1978).

The present vegetation within the project study area has been almost totally altered from its natural state. Commercial and residential development within Mankato, North Mankato, and Le Hillier has resulted in the almost total removal of the original forest and prairie vegetation of the area. Only isolated patches of second growth deciduous species similar to the original species remain on the steep slopes of the river banks although these areas, too, have been severely altered by bank stabilization and landscaping. The majority of the project area now consists of landscaped residential and commercial yards and grounds as well as urban areas devoid of any vegetation.

LITERATURE SEARCH AND RECORDS REVIEW

During the course of the literature search for the Mankato Bridge Replacement Project, a variety of published sources, file data, and manuscripts were examined with the goal of defining the existence of any known cultural resource sites from the entire range of the prehistoric and historic periods within the study area. Efforts were also expended to gain familiarity with documented regional and local settlement and resource exploitation patterns to aid in the formulation of an appropriate research strategy for the survey as well as the possible prediction of unknown resources.

Archaeological Sources-Prehistoric

The search for data pertaining to known sites within the proposed project impact zone and regional resource data to provide cultural context for project survey data was initiated with a search of the following repositories of file data regarding known archaeological resources:

- Minnesota "State Archaeologist" Archaeological Site File housed at Hamline University with copies at the Archaeology Department of the Minnesota Historical Society, both in St. Paul, Minnesota.
- Site Files of the Minnesota State Historic Preservation Office located at the Minnesota Historical Society, Fort Snelling History Center, St. Paul, Minnesota.
- Field notes of T. H. Lewis, Northwestern Archaeological Survey, 1881-1895 on file at Minnesota Historical Society Manuscripts Section.
- Miscellaneous "county memos" of Professor Lloyd Wilford, former Minnesota State Archaeologist from files of the University of Minnesota Department of Anthropology.
- Data on file at the Blue Earth and Nicollet County Historical Societies pertaining to archaeological resources.

The review of these records indicated that no prehistoric archaeological sites had been documented within the proposed limits of the Main Street and T.H. 169 bridge alteration projects. This review did, however, provide worthwhile information regarding the regional and local culture history and

previous investigations. In an attempt to better understand the regional culture history and man-land relationships, the following published summary monographs and articles were consulted:

Anfinson, Scott F. (ed.)

- 1979 A Handbook of Minnesota Prehistoric Ceramics, Occasional Publication In Minnesota Anthropology No. 5, Minnesota Archaeological Society, St. Paul.
- 1981 The Prehistoric Archaeology of the Prairie Lake Region: A Summary From A Minnesota Perspective, paper presented at the 39th Plains Conference, Bismark.

Hudak, G. Joseph

- 1980 Cultural Resources Literature Search and Records Review of the Upper Minnesota River Subbasin, Southwestern Minnesota and Northeastern South Dakota, Archaeological Field Services Inc. under contract with the U. S. Army Corps of Engineers, St. Paul District.

Johnson, Elden

- 1978 The Prehistoric Peoples of Minnesota, revised Second Edition Prehistoric Archaeology Series #3, Minnesota Historical Society, St. Paul.

Wilford, Lloyd A.

- 1941 A Tentative Classification of the Prehistoric Cultures of Minnesota, American Antiquity 6:231-249.
- 1945 Three Village Sites of the Mississippi Pattern in Minnesota, American Antiquity, Vol. 11, pp. 32-40.
- 1955 A Revised Classification of the Prehistoric Cultures of Minnesota, American Antiquity 21, pp. 130-142.

Winchell, Newton H.

- 1911 The Aborigines of Minnesota, Minnesota Historical Society, St. Paul.

These general sources all provided useful background information to guide the survey and aid in the analysis of its results.

To further familiarize the author with the nature of the known archaeological resources within Blue Earth and Faribault Counties, a number of manuscripts and published articles pertaining to excavations at, and data from, excavated sites in that area were reviewed including:

Knudson, Ruthann

- 1967 Cambria Village Ceramics, Plains Anthropologist 12 (37).

Lass, Barbara M.

- 1980 Radiocarbon Dates from Minnesota Archaeological Sites to 1979, The Minnesota Archaeologist 39(1):29-39.

Watrall, Charles

- 1968 An Analysis of the Bone, Stone, and Shell Materials of the Cambria Focus, unpublished M.A. Thesis, Department of Anthropology, University of Minnesota, Minneapolis.
- 1974 Subsistence Pattern Change at the Cambria Site, In Aspects of Upper Great Lakes Anthropology, E. Johnson (ed.) Minnesota Prehistoric Archaeology Series #11, pp. 138-142.

Wilford, Lloyd A.

- 1938 Cambria Village, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1942 Judson Mounds, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1943 Hanel Mounds, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1945 Humphrey Village, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
Cambria Village, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1946 O.D. Jones Village Site, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1952 The Vosburg Village Site, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.
- 1956 Lewis Mounds, unpublished MS. on file, Department of Anthropology, University of Minnesota, Minneapolis.

Wilford, Lloyd A., Elden Johnson and Joan Vicinus

- 1969 Burial Mounds of Central Minnesota, Minnesota Prehistoric Archaeology Series No. 1, Minnesota Historical Society, St. Paul.

Information was also collected from the following published and manuscript sources pertaining to previous archaeological surveys in the Mankato area:

Lofstrom, Edward E.

- 1981 A Possible Altithermal Habitation Site In Faribault County, Minnesota, paper presented at the 6th Annual Council for Minnesota Archaeology Spring Symposium, St. Paul.

Minnesota Historical Society

- 1981 Minnesota Statewide Archaeological Survey, Summary: 1977-1980, St. Paul.

Roetzel, Kathleen A.

- 1981 An Archaeological Reconnaissance Survey of the Proposed Chicago and Northwestern Railroad Bridge Modification, Blue Earth County, Minnesota, Impact Services Inc., Mankato, Minnesota, under contract with U. S. Army Corps of Engineers, St. Paul District.

Strachan, Richard A. & Kathleen A. Roetzel

- 1975 Report on the Archaeological Survey of the Mankato Flood Control Project, Mankato State University, Museum of Anthropology under contract with the U. S. Army Corps of Engineers, St. Paul District.

Trow, Thomas

- 1978 The Prehistory of Brown and Redwood Counties: An Archaeological Survey of the Cottonwood River. MS. on file at the Minnesota Historical Society, St. Paul.

Annual Reports of the Minnesota Trunk Highway Archaeological Reconnaissance Survey 1968-1980 and the County-Municipal Archaeological Reconnaissance Survey 1975-1980 of the Minnesota Department of Transportation and the Minnesota Historical Society were also reviewed for local survey data. Together, the above reports provided useful information regarding the nature of previous archaeological surveys in the Mankato area, the survey conditions encountered and the results. No record of archaeological sites not appearing in the Minnesota Archaeological Site File relating to the project were discovered.

In addition to the above search of written sources, personal communications with individuals involved in regional research, including Orrin C. Shane and Timothy Ready of the Science Museum of Minnesota and Clark A. Dobbs of the University of Minnesota, provided important information regarding history of investigation, culture history, and settlement patterns. Aerial photographs, early plat maps, government land survey notes, and Minnesota Department of Transportation maps and plans pertaining to all highway construction and revisions in the project area since the 1920s were also reviewed.

The information gathered during the course of the above search of published reports, manuscripts, and files pertaining to archaeological surveys, sites, and collections in the Mankato area and the general region all provided information which contributed to the preparation of the brief summary of previous investigations and the regional culture history that follows.

Again, no known prehistoric archaeological sites were found to exist within the project study areas during the course of the literature search and record review.

Historic Period Sources

The records search for the proposed highway bridge modifications of the Mankato Flood Control Project began with a review of files and records pertaining to recorded historical and architecturally significant sites and structures within the project study area and included:

- State Historic Preservation Office files, formerly located at Bldg. 25, Fort Snelling, currently at the Fort Snelling History Center, St. Paul. These records include data relating to sites nominated to the National Register of Historic Places, the State Inventory of Historic Sites and miscellaneous county files of historic sites data. These files and the information contained within the consultant report on historic resources in the study area (Leviton 1980) provided a comprehensive review of the architectural features of the project study area. Due to the completion of this independent standing structure analysis, recent structural surveys by the SHPO staff and ongoing interaction between the SHPO and the

Corps of Engineers, historic standing structures were not directly addressed in the present survey.

- Statewide Archaeological Survey files, formerly located at Bldg. 25, Fort Snelling, currently at the Fort Snelling History Center, St. Paul. Files and data pertaining to the Statewide Archaeological Survey's investigations within the Blue Earth and Cottonwood Rivers' watersheds were reviewed.
- Files of Minnesota Historical Society Archaeology Department, then housed at Bldg. 27, Fort Snelling, currently located at the Fort Snelling History Center. Records kept in this repository, including file data pertaining to fur trade sites and licenses, abandoned townsites, nineteenth and early twentieth century plat maps on microfilm, and miscellaneous survey and bibliographic data, were consulted.
- U.S. General Land Office survey maps and notes. These data generated during the first United States land surveys of the study area in 1855 are filed in the office of the Secretary of State in the State Office Building, St. Paul.
- Aerial photographic imagery available at the University of Minnesota library spanning the period from 1937 to the present was reviewed to trace project area development and alteration.
- Minnesota Department of Transportation map files were reviewed to establish changes in the trunk highway alignments since ca. 1920 as well as located areas where residences were displaced by former construction and the limits of previous terrain alteration.

To supplement the data on known historic sites contained within the above files and records, a variety of historical literary sources were reviewed to familiarize the investigator with local historical events and developmental sequence and to locate sites of specific historical events or features within the study area which might yield archaeological data. To that end, the following bibliographic sources and general historical works were consulted which gave the literature search direction and provided general contextual information as well as defining some specific sites and events throughout the span of regional and local history.

Brook, Michael

- 1974 Reference Guide to Minnesota History: A Subject Bibliography of Books, Pamphlets and Articles in English, Minnesota Historical Society, St. Paul.

Folwell, William W.

- 1921 A History of Minnesota, 4 Vols., Minnesota Historical Society, St. Paul.

Hughes, Thomas

- 1909 History of Blue Earth County, and Biographies of Its Leading Citizens, Middle West, Chicago.

Neill, Rev. Edward D.

- 1882 History of the Minnesota Valley, including the Explorers and Pioneers of Minnesota, North Star Publishing, Minneapolis.

Smith, Michael J.

- 1967 Historic Sites in the Minnesota River Valley: A Compilation, unpublished Ms on file Minnesota Historical Society Archaeology Department.

White, Bruce M.

- 1977 The Fur Trade in Minnesota: An Introductory Guide to Manuscript Sources, Minnesota Historical Society, St. Paul.

In an attempt to reconstruct the history of the period of exploration and Euro-American settlement within the region as well as defining the specific loci of several period sites within the Mankato area, the following references were consulted:

Andreas, Alfred T.

- 1874 An Illustrated Historical Atlas of the State of Minnesota, Chicago.

Berthel, Mary W.

- 1948 Horns of Thunder: The Life and Times of James M. Goodhue Including Selections From His Writings, Minnesota Historical Society, St. Paul.

Bray, Edmund C. & Martha C. Bray (translators & editors)

- 1976 Joseph N. Nicollet on the Plains and Prairies: The Expeditions of 1838-39 with Journals, Letters and Notes on the Dakota Indians, Minnesota Historical Society, St. Paul.

Featherstonehaugh, George W.

- 1970 A Canoe Voyage Up The Minnay Sotor, Minnesota Historical Society, St. Paul (originally published 1835).

Frame, Robert M. III

- 1977 Millers to the World: Minnesota's Nineteenth Century Water Power Flour Mills, Minnesota Historical Society, St. Paul.

Keating, William H.

- 1825 Narrative of an Expedition to the Source of St. Peter's River Performed in the Year 1823, George B. Whittaker, London.

Singley, Grover

- 1974 Tracing Minnesota's Government Roads, Minnesota Historical Society, St. Paul.

Winchell, Newton H.

- 1911 The Aborigines of Minnesota, Minnesota Historical Society, St. Paul.

Information regarding the Fur Trade Era and the American Indian populations with whom the traders interacted was gathered from several sources:

Babcock, Willoughby M.

- 1945 Sioux Villages In Minnesota Prior to 1837, The Minnesota Archaeologist 11:126-146.

Birk, Douglas A.

- 1982 The Archaeology of Fort St. Charles (21 LW 6) and the French Regime in the Minnesota Area, draft of Ms in preparation.

Gilman, Rhoda R.

- 1970 The Last Days of the Upper Mississippi River Fur Trade, Minnesota History 42:122-140, St. Paul.

Hughes, Thomas

- 1908 The Site of Le Sueur's Fort L'Huillier, Minnesota Historical Collections 12:283-285.

Neill, Edward D.

- 1902 Dakota Land and Dakota Life, Minnesota Historical Society Collections 1:205-240.

Nute, Grace Lee

- 1930 Posts in Minnesota Fur Trading Area, 1660-1855, Minnesota History 11:353-386, St. Paul.

Nystuen, David W.

- 1969 Minnesota Historical Society, Historic Sites Archaeology Program 1968, Minnesota Historical Society, St. Paul.

Pond, Samuel W.

- 1908 The Dakotas or Sioux in Minnesota As They Were In 1834.
Minnesota Historical Society Collections 12:319-501, St. Paul.

Quimby, George I.

- 1960 Indian Life in the Upper Great Lakes, 11,000 B.C. to A.D. 1800, University of Chicago Press, Chicago.

Robinson, Deane

- 1956 A History of the Dakota or Sioux Indians, Ross and Haines, Minneapolis.

Sibley, Henry H.

- n.d. Papers, Minnesota Historical Society, Division of Archives & Manuscripts, Papers, Correspondence, Business Records, 1815-1930.

Vogel, Robert C.

- n.d. The French Presence in Minnesota: A Selective Bibliographic Guide for Archaeologists, unpublished Ms on file University of Minnesota, Department of Anthropology, Minneapolis.

Wedel, Mildred M.

- 1974 Le Sueur and the Dakota Sioux. In Aspects of Upper Great Lakes Anthropology, Minnesota Prehistoric Archaeology Series #11, Minnesota Historical Society, St. Paul.

The review of the above referenced published and unpublished books, papers, reports, and file data related to the historic period provided adequate information to prepare the summary of the regional culture history that follows as well as defining the historic sites which have been recorded within the project area currently under review.

SUMMARY OF ALL POTENTIAL CULTURAL RESOURCES WITHIN THE STUDY AREAS RECORDED DURING THE LITERATURE SEARCH/RECORDS CHECK

Historic Standing Structures

As noted above, the proposed study areas for the Mankato Flood Control Bridge modifications have been surveyed for historic resources under a separate U. S. Army Corps of Engineers' contract with Rieke, Carroll, Muller Associates (Leviton 1980). This survey defined 262 historic properties in Mankato, 232 of which were considered by the investigators to be potentially eligible for listing on the National Register of Historic Places, including two sites then on the National Register, and 27 which they reported to have been nominated subsequently. At the time of preparation of this report, 14 structures and one commercial district were listed on the National Register within Mankato (Appendix F). All of these sites consist of residential and commercial standing structures. The Rieke, Carroll, Muller Associates survey revealed, however, that the two preferred project alternatives which were considered under the current survey (Main Street Alternative 1CA and T.H. 169 Alternative 1C) avoided direct impact to any of the nominated properties. The question of indirect impacts and recent determinations of eligibility of additional properties are currently being negotiated directly between the U. S. Army Corps of Engineers and the State Historic Preservation Office. Due to the in-depth nature of the previous standing structure surveys and the ongoing nature of final interagency negotiations, analysis of standing structures was not required under the present study. The main focus was, thus, archaeological in nature.

Prehistoric Archaeological Sites

During the course of the literature and record search, no known archaeological sites were found to exist within the limits of either the study

area for Main Street Bridge Alternative 1CA or T.H. 169 Bridge Alternative 1C. However, four prehistoric archaeological sites have been recorded within one mile of the project study areas and are provided here for context.

1. Site 21 BE 8

Winchell (1911:99) recorded three small burial mounds on the basis of an 1889 T.H. Lewis survey in the SW $\frac{1}{4}$, SE $\frac{1}{4}$, Section 23, T108N, R27W on uplands overlooking the Blue Earth River. This site is located one mile south of the proposed T.H. 169 bridge modification project and is not affected in any way. Rechecks of the site in recent years have indicated that the entire site has been completely destroyed by a residential development (Fig. 9).

2. Site 21 BE 20

Limited surveys by Douglas Birk and Scott Anfinson of the Minnesota Historical Society in 1978 resulted in the recording of a scatter of lithic debris at the crest of an upland zone overlooking the Blue Earth River in the S $\frac{1}{2}$, NE $\frac{1}{4}$, NW $\frac{1}{4}$; NE $\frac{1}{4}$, SW $\frac{1}{4}$, NW $\frac{1}{4}$; and NW $\frac{1}{4}$, SE $\frac{1}{4}$, NW $\frac{1}{4}$, Section 23, T108N, R27W. The wooded vegetation cover in this zone provided poor conditions for this surface reconnaissance and only a small collection of culturally non-diagnostic debitage was recovered. This site lies one-half mile southwest of the proposed T.H. 169 bridge modification project and is not affected (Fig. 9).

3. Site 21 BE 33

A multi-component habitation site was recorded by Richard Strachan of Mankato State University on "King's Mound" at the mouth of the Blue Earth River in the SE $\frac{1}{4}$, SE $\frac{1}{4}$, NW $\frac{1}{4}$ and SW $\frac{1}{4}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$, Section 14, T108N, R27W during the 1975 survey of the Mankato Flood Control Project (Strachan and Roetzel 1975). This habitation site which reportedly contained Archaic, Woodland, and Mississippian components was tested at the time of the survey. This site lies one-half mile north-northwest of the T.H. 169 bridge modification study area and is not affected (Fig. 9).

4. Possible Mounds At Mankato

Winchell (1911:100) reported that there were "formerly several mounds along the edge of the plateau on the townsite of Mankato" in the

SE $\frac{1}{4}$, NE $\frac{1}{4}$, Section 13, T108N, R27W. They were reported as destroyed in 1911 and are now located in a heavily developed urban area which has left no trace of them. This possible destroyed site is located between the Main Street bridge project area and the T.H. 169 bridge project area but is affected by neither (Fig. 9).

Thus, the literature search provided no record of any known prehistoric archaeological resources which would be potentially affected by either the T.H. 60 - Main Street bridge modification or the T.H. 169 bridge modification, although the existence of two burial sites and two habitation sites within one mile of the projects in topographically similar settings suggests that there is potential for their existence in the study areas.

Potential Historic Archaeological Sites

The search of historical literature revealed that the entire study area for both the T.H. 60 - Main Street Bridge modification and the T.H. 169 bridge modification had to be considered as having considerable potential for the existence of significant historical archaeological sites due to their close proximity to centers of early commerce and settlement. Four general locations within the study areas were defined as having the highest potential for the existence of such features.

Original Mankato Townsite

The east bank of the Minnesota River in the vicinity of Main and Front Streets at the south end of the present T.H. 60 Main Street bridge was the nucleus of the early growth of the city of Mankato from its inception in 1852 (Fig. 9). This was the site of some of the earliest residences and commercial buildings in the 1850s and 1860s (Hughes 1909) and was also the site of the early steamboat landing and ferry crossing (Smith 1967:21). Therefore, the east bank of the T.H. 60 - Main Street Bridge modification study area was considered to have considerable potential for the existence of historical archaeological data although the area was known to be severely disturbed by subsequent urban development.

Fort L'Huillier

One of the most interesting episodes during the period of European exploration and fur trading within the Mississippi Basin involves the exploits of the French trader Pierre-Charles Le Sueur on the Blue Earth River in the Mankato area in 1700-1702. During that period, it appears that Le Sueur established a fort near the mouth of the Blue Earth River with the goal of mining the blue-green clays exposed in the river valley which were thought to contain abundant copper. Between the fall of 1700 and 1702 Le Sueur and his party built and occupied a fort, mined the blue-green "ore," hunted for subsistence and traded with the Indians (Wedel 1974:162). Unfortunately, the actual site of Fort L'Huillier has never been securely located. Although the traditional location of Fort L'Huillier defined by Hughes (1908) as three miles up the Blue Earth at the mouth of the Le Sueur River has long been accepted, recent evidence (Fiske 1966, Nystuen 1969, Wedel 1974, Birk 1982) has begun to suggest that this location may not be correct. Mildred Mott Wedel's (1974) translation of the original texts has led some investigators to seek Le Sueur's fort further downstream. To date, no concerted effort has been made to locate the actual site of Fort L'Huillier and its actual location remains a mystery. Although current hypotheses tend to place Fort L'Huillier at least one-half mile up river (south) of the T.H. 169 modification study area, it cannot be demonstrated with certainty that it was not located nearer to the project area. Therefore, the precise site location and relationship to the project area remains uncertain.

American Fur Company Post

Several secondary references (Hughes 1909:31, Smith 1967:22, Berthel 1948:193) place a small fur trading post at the north edge of Sibley Mound at the mouth of the Blue Earth River in 1850. A brief review of the microfilm edition of the Henry Hastings Sibley papers for that date, however, failed to confirm the existence of such a post. If this location is valid, it would place the site in approximately the center of the NE $\frac{1}{4}$ Section 14, T108N, R27W (Fig. 9). This

locality is one-half mile north of the T. H. 169 bridge modification project and would, thus, not be affected by the proposed alterations.

Possible Sisseton Village at Mouth of Blue Earth River

Keating (1959:356) reported that in 1823 "the mouth of the Blue Earth River is the chief residence of a tribe of the Dacotas (sic), who call themselves the miakechakesa, and who are generally known by the traders by the name of Sisitons (sic)." This report was apparently made on the basis of heresay, however, since the Long expedition of which Keating was a part traveled over land across the "Big Bend" of the Minnesota River and never got closer than fifteen miles to the reported site. Potential confusion may stem from the fact that Hughes (1927:87) also reports that the river valley at Minneopa about two miles west of the Blue Earth River had been the wintering village of Sintomniduta's band of Sisseton Dakota "for many years." Therefore, these reports do not clearly define the Sisseton village locations or limits, but they do tend to document such habitations in the general area. The nature of this possible site and its relationship remains unclear.

HISTORY OF PREVIOUS INVESTIGATIONS IN THE MANKATO AREA

Although the first record of the "scientific" study of archaeological sites in the Mankato area dates to the 1880s, investigations in the area during the ensuing century were primarily focused on the recording and excavation of burials and the excavation of several major late prehistoric village complexes along the Minnesota and Blue Earth rivers. Only within the last decade have funding, personnel, and the redefinition of local research problems involving the study of regional settlement patterns throughout the prehistoric period allowed more intensive site surveys, excavations, and collection analysis.

The first scholarly study of archaeological resources in the Mankato area took place under the "Northwestern Archaeological Survey" which operated between 1881 and 1895. This survey consisted of the recording of prehistoric burial mounds and other earthworks by surveyor Theodore H. Lewis and was commissioned by Alfred J. Hill of St. Paul. Lewis' surveys in the Mankato area in 1887 and 1889 recorded a variety of mound groups along the courses of the Minnesota and Blue Earth rivers, as well as adjacent to several regional lakes, but none of them were located within the project study area. The closest sites to the project area lie in Blue Earth County, including seven conical mounds on a Minnesota River terrace at South Bend (21 BE 7) approximately 1.5 mile west of the T.H. 169 bridge study area and a group of three conical mounds (21 BE 8) atop the uplands overlooking the Blue Earth River Valley approximately one mile south of the same project. During the twentieth century, the pace of scientific archaeological research in the region increased. Following some early attempts at controlled excavations at the Cambria Site, 21 BE 2, a major late prehistoric agricultural village near the village of Cambria (Nickerson 1913, 1916), scientific archaeological excavations were first undertaken in south-central Minnesota during the 1930s by Professor Lloyd A. Wilford of the University of Minnesota. Between 1938 and 1957 Wilford excavated three burial mound groups along the Minnesota River in Blue Earth County, including Hanel (21 BE 1), Judson (21 BE 3), and Harbo Hill (21 BE 10), as well as two Late Prehistoric agricultural villages, Cambria (21 BE 2) and O. D. Jones (21 BE 5). One additional mound at the Poehler Site (21 NL 1) was excavated at Swan

Lake in Nicollet County and two major late prehistoric agricultural villages of the Humphrey-Vosburg complex (21 FA 1 and 21 FA 2) were excavated near Winnebago in Faribault County approximately 35 miles south-southwest of Mankato. On the basis of excavations during this period, Wilford provided the first formal classification and analysis of the temporal and cultural relationships of southern Minnesota's archaeological cultures (1941). This classificatory scheme which was couched in the terms of the Midwestern Taxonomic System of McKern (1931) was revised in 1955 to include new data and still forms the foundation of much regional taxonomy.

No further archaeological investigations took place in the Mankato area until 1968 when David Nystuen of the Minnesota Historical Society conducted test excavations at the locality traditionally recognized as the site of Fort L'Huillier, the trading post of French trader Charles Le Sueur in the years 1700-1702. Excavations at this site on the Blue Earth River approximately two miles upstream (south) from the present T.H. 169 bridge alteration project provided no evidence of the French period occupation but did yield prehistoric habitation materials (Site 21 BE 19).

The last phase of archaeological research in the Mankato region began in 1975 when Professor Richard Strachan of Mankato State University began an active program of archaeological survey and excavation. In that year Strachan and Roetzel (1975) conducted an archaeological survey of the then proposed Mankato Flood Control improvements under contract with the U. S. Army Corps of Engineers, St. Paul District. This project included revision of existing levees, flood walls, impoundments, control structures, and associated recreational facilities. This survey scope did include the review of the levee areas now transected by the current study area for the T.H. 169 bridge alteration. The 1975 survey which included surface reconnaissance, shovel testing, and formal testing resulted in the definition of one multi-component prehistoric habitation site (21 BE 33) at the mouth of the Blue Earth River as well as one scatter of lithic debris of indeterminate age in a borrow pit (21 NL 28), one destroyed lithic site at the southwestern limits of Mankato, and several find spots of lithic debris along existing levees. None of these sites or find spots are located within the limits

of the study area for the current bridge alteration studies although site 21 BE 33 is only three quarters of a mile north of the T.H. 169 bridge study area.

During 1975 and 1976 Strachan and Roetzel continued Mankato State University's archaeological research program, conducting surveys in the area of Mankato and the Le Sueur River as well as in the area of Swan Lake, twelve miles northwest of Mankato in Nicollet County. These surveys resulted in the recording of over thirty archaeological habitation and limited-use sites representing a broad span of cultural/temporal relationships but primarily attributable to the Middle and Late Woodland traditions. In subsequent years, Strachan and Roetzel have conducted additional surveys in the Swan Lake area and have engaged in several seasons of intensive excavation at some of the sites located there.

In 1978 surveys were conducted by Anfinson (1979a) within the limits of a proposed county road in the vicinity of the Blue Earth River approximately two miles south of the present study area for the T.H. 169 bridge alteration. During the course of this study, a lithic workshop site was recorded east of the river (21 BE 38) and another lithic scatter (21 BE 20) was noted on the west side of the Blue Earth River ca. 2 miles south of the T.H. 169 bridge during the investigation of hypothetical alternate locations for Le Sueur's Fort L'Huillier. Again, however, no evidence of the French post was recovered.

Since 1978 several major archaeological research projects have been undertaken within the Blue Earth River watershed south of Mankato. In 1979 a combined statistical sampling and intuitive survey was conducted within the Blue Earth Basin in Blue Earth and Faribault Counties under the auspices of the Statewide Archaeological Survey of the Minnesota Historical Society (Lofstrom 1981). This survey resulted in the recording of more than 70 sites ranging over 8,000 years of prehistory as well as rechecking a number of known sites. A final report of this survey is in preparation. None of the parcels surveyed for the project lie within the current bridge alteration study areas. The northernmost survey parcel of the Statewide Survey is ca. 2 miles south of the bridge study zone.

Another active research effort has also been underway in the vicinity of the Blue Earth River at Winnebago, 35 miles south-southwest of Mankato. Following excavations under the direction of Professor Guy Gibbon of the University of Minnesota at the Late Prehistoric Humphrey and Vosburg Oneota sites (21 FA 1 and 21 FA 2), an active program of area sampling and intuitive surveys under the direction of Clark Dobbs of the University of Minnesota has recorded over forty new sites in the vicinity. Analysis is ongoing and a report is in preparation.

A similarly aggressive program of survey and testing has also been undertaken during 1980 and 1981 by Dr. Orrin Shane and Timothy Ready of the Science Museum of Minnesota. Within this project the researchers have conducted intensive surveys of over 90% of the Blue Earth River trench between the south county line and the southwest outskirts of Mankato. Statistical sampling of areas away from the Blue Earth trench has been done near the south county boundary as well. This survey has reportedly located over 200 archaeological sites spanning perhaps 6,000 years of culture history and representing a variety of site types and functions (Shane, personal communication). Sites have been recorded in floodplain, terrace, and upland settings both adjacent to and away from the Blue Earth trench. The northern limit of this survey lay approximately three miles southwest of the current T.H. 169 bridge alteration study area. Thus, the Science Museum of Minnesota study did not involve any of the lands contained within the Mankato Bridge Alteration study areas.

During 1981 an archaeological reconnaissance survey was also conducted by Impact Services Inc. (Roetzel 1981) within the small study area for the proposed modifications to the Chicago and Northwestern Railroad bridge over the Blue Earth River at Le Hillier under a contract with the U. S. Army Corps of Engineers, St. Paul District. This study, located downstream (north) approximately 1,000 feet (300 m) from the present study area for the proposed T.H. 169 Blue Earth River bridge modifications, resulted in the definition of no new archaeological resources.

Therefore, it may be seen that although archaeological research has been conducted within the Mankato area for nearly 100 years, only one archaeological study, the Mankato Flood Control survey by Strachan (1975), has involved lands included in the present bridge alteration study. Neither that survey nor any of the other previous investigations has recorded any archaeological sites or data within the limits of the present study.

These studies have provided information complementing other broader regional data which has allowed the reconstruction of the regional culture history which follows.

SUMMARY OF REGIONAL PREHISTORY AND HISTORY

Although the culture history of the study areas for the proposed Mankato Flood Control Project highway bridge alterations may be reconstructed with relative ease for the period following the arrival of the earliest Euro-American settlers at Mankato in 1852, the broad span of prehistoric and historic human culture in the project area is generally unknown due to a lack of previous intensive archaeological surveys and excavations coupled with the extensive disturbance of the project area by over a century of urban development. Therefore, to provide cultural context for the project area, it is necessary to consider the project area within the broader area of south-central Minnesota. In turn, these local cultural developments which are frequently poorly defined must be placed within the context of the scope of the prehistoric and historic cultures defined by archaeological surveys and excavations within the still broader Upper Great Lakes region.

A general summary of the culture history of south-central Minnesota is presented below within the broader context of its relationship to the upper Great Lakes area. For this discussion, the prehistoric period has been defined as extending from the earliest entry of man into the region until approximately A. D. 1700, when the first thoroughly documented long-term European presence was felt in the area due to the establishment of the French post, Fort L'Huillier, near Mankato by Pierre Charles-Le Sueur. This date has been selected as a convenient reference point and should not be interpreted as any finite temporal/cultural boundary. Surely, the far-flung influences of the contact of European and American Indian cultures preceded the actual physical presence of the French in the region and it appears that Le Sueur himself may have briefly explored the Minnesota and Blue Earth rivers in 1694-95.

Prehistoric Archaeological Culture of South-Central Minnesota

This review of the prehistory of south-central Minnesota generally follows that presented by Johnson (1978) within the broader culture-historical periods proposed by the same author in 1979.

Early Prehistoric Period

The Early Prehistoric Period is the first of three major periods of cultural development within which the defined cultural traditions may be seen to exist. This period began with the first incursions of prehistoric populations into southern Minnesota soon after the final retreat of the Pleistocene glaciers about 11,000 years ago and lasted until the beginning of the Middle Prehistoric Period about 3,000 B.P.

Paleo-Indian Tradition, ca. 11,000 - 7,000 B.P.

The earliest cultural tradition defined within the region is called Paleo-Indian, dating between about 11,000 and 7,000 B.P., and is poorly defined in southern Minnesota. To date no sites firmly placed within this tradition have been excavated within Minnesota, although a few of the stone tool forms which characterize the material culture of the period have been reported as surface discoveries. On the basis of data gathered across North America, it appears that the Paleo-Indian populations entered this area after 12,000 B.P. in small migratory hunting groups with a subsistence pattern primarily based on the hunting of large game including mammoth and bison. Although cultural changes are observable in the transition through "Clovis," "Folsom," and "Plano" horizons, again based almost completely on the form of the lanceolate and stemmed stone spear heads which typify the period, it appears that the general migratory lifestyle based primarily on the hunting of bison continued throughout the period. For this reason sites consist of hunting kill-sites and small camp sites with sparse artifact distributions.

Few Paleo-Indian artifacts have been recovered in archaeological excavations anywhere in Minnesota. While no Clovis or Folsom tools have been recovered "in-situ" in Minnesota excavations, "Plano"-related points were recovered at the Brown's Valley site (21TR5) on Minnesota's western border in the 1930s and similar tools have been reported from excavations at the Hildahl #1 site (21YM35) near Granite Falls in southwestern Minnesota (Dobbs 1979:61-62).

Although no Paleo-Indian sites have been excavated in south-central Minnesota, the recovery of Paleo-Indian points from Blue Earth County

(Shane, personal communication), as well as adjacent Brown (Trow 1979) and Faribault (Lofstrom 1981) Counties, documents the presence of Paleo-Indian hunting groups in the forests, savannahs, and grass lands of southern Minnesota prior to 7,000 B.P. The settlement and resource exploitation patterns of these early populations are poorly understood, however, although their arrival in the area may be associated with the prairie expansion beginning about 9,000 B.P.

Archaic Tradition, ca. 7,000 B.P - 3,000 B.P.

After 7,000 B.P. the cultures of the Eastern Archaic Tradition which existed in southern Minnesota appear to have adapted more fully to their regional environments, with a diffuse subsistence economy, utilizing a broader variety of large and small animal species and vegetable resources, although the semi-nomadic lifestyle of the preceding Paleo-Indian Tradition is thought to have been generally retained. On a regional level, the number of known sites attributable to the Archaic Tradition increases markedly. This increase in the number of known sites may either represent a change in population and site size, or duration of occupation, or it may represent sample error based on survey bias, unpredictable Paleo-Indian settlement pattern, or deep burial of early habitation levels. It appears unlikely that sampling bias accounts for all of the difference in the number of known Paleo-Indian and Archaic sites, however. It appears that the diffuse economy of the Archaic allowed some increase in population levels over that of the Paleo-Indian big game hunters.

Few Archaic sites have been excavated in south-central Minnesota. Therefore, the nature of the Archaic adaptation in this area is poorly understood. Only the Runck sites (21 BW 5 and 21 BW 7) near New Ulm and the Albert Lea Lake site (21 FE 1) in Freeborn County have yielded excavated Archaic components. While these sites document the presence of stemmed and notched projectile points characteristic of the period and suggest a burial mode consisting of primary interment in subsurface pits, they provide little hard data on the temporal range, settlement pattern, or resource exploitation patterns of the local Archaic cultures. Test excavations at site 21 BE 33 at the mouth of the Blue Earth River also provided evidence

of a possible Archaic level with some burned faunal evidence in close proximity to the Mankato Flood Control bridge alteration study areas.

By comparison, southeastern Minnesota has yielded Archaic habitation sites in both open settings (21 DK 4, 21 WN 15) and within rock shelters (21 DK 2, 21 WN 1, 21 WA 5) although little subsistence data was available and the occupations appear to be short term. In southwestern Minnesota, Archaic components have been defined at three major excavated multi-component sites, 21 CO 2, 21 LN 2, and 21 MR 2, as well as at 21 YM 35. Only one radiocarbon date is available from this research, however, that of 3494 \pm 85 B.P. from Archaic levels at the Pedersen site (21 LN 2) at Lake Benton (Lass 1980:35, Hudak 1974). Unfortunately, the Archaic levels at all of these sites consisted of sparse lithic distributions underlying ceramic upper levels and yielded little or no faunal material to aid in the reconstruction of the subsistence base. The analysis of a small sample of faunal remains from the 1976 Science Museum of Minnesota excavations at site 21 CO 2 at Mountain Lake resulted in the identification of bison and canids only (Shane 1978).

Survey data have served to confirm the presence of Archaic peoples in south-central Minnesota mainly through the discovery of stemmed and notched projectile point forms which appear to relate to the Archaic Tradition. In recent years a number of Archaic sites have been discovered in south-central Minnesota during the course of the Minnesota Statewide Archaeological Survey. The field data from surveys in the Blue Earth and Cottonwood rivers are still under analysis but confirm the presence of apparent Archaic stone tool assemblages in both riverine and lacustrine settings (Lofstrom 1981, Trow 1979). Surveys within the lower Blue Earth basin by the Science Museum of Minnesota during 1980-81 have also yielded evidence of Archaic occupation along the upper river terraces (Shane, personal communication).

Thus, while a few sparse Archaic components have been encountered in excavations in south-central Minnesota, confirming the evidence of an Archaic presence yielded by surface collections, the settlement pattern and subsistence base during this period remains largely unknown. It appears that Archaic peoples occupied the entire region, probably adapting in differing ways to a variety of environmental settings. In south-central

Minnesota, it appears that these peoples exploited the resources of the rivers and lakes in both the prairie and woodland zones. Occupation sites remain small, short term segments within a probable seasonal round, and primary burials were placed in subsurface pits. The preferred habitation locations appear, on the basis of present information, to be middle and high river terraces, lakeshores, and islands. By the end of the Early Prehistoric Period, climatic and vegetation patterns appear to have stabilized at approximately their current status.

Continued analysis of the survey and excavation data gathered by the Statewide Survey and the Science Museum of Minnesota within the Blue Earth River basin between 1979 and 1981 may serve to add much needed information about Archaic lifestyles.

Middle Prehistoric Period

The first use of pottery cooking and storage vessels and the placement of human burials in earthen burial mounds marks the beginning of the Woodland Tradition in the Middle Prehistoric Period.

Early and Middle Woodland Tradition, ca. 3,000 - 1,000 B.P.

The Early Woodland Tradition in southeastern Minnesota is characterized by the appearance of La Moille Thick pottery (Hudak and Johnson 1975, Anfinson 1979b) at habitation sites. It appears the conoidal, cord impressed La Moille ceramics are related to Marion Thick wares in Illinois and Michigan. Only two sites in southeastern Minnesota (21 WN 1, 21 WA 1) have yielded La Moille ceramics--one, a rock shelter; the other, an open site. Little is therefore known about the geographic distribution and temporal range of settlement-subsistence patterns during the Early Woodland Period. The evidence from the La Moille rock shelter (21 WN 1) has yielded fish bone deposits in both the La Moille levels and in underlying Archaic habitation levels, suggesting a general continuity of the Archaic lifestyle. Hudak and Johnson (1975) have suggested a temporal range of 500-300 B.C. for La Moille Thick ceramics.

One surface assemblage from site 21 WW 8 near Madelia on the west side of the Blue Earth basin has suggested that ceramics similar to La Moille

Thick may be present in south-central Minnesota as well. At the present time, however, the early phases of the Middle Prehistoric Period are very poorly understood in south-central Minnesota. If such cultures are present, however, it appears that little change took place in the lifestyle except the addition of the use of pottery. Burial modes are unknown during this period.

During the Middle Woodland, significant regional variation becomes apparent. In southeastern Minnesota, a series of zoned, stamped Sorg and Howard Lake sub-conoidal ceramics (Anfinson 1979b) appear by about 200 B.C. which bear some resemblance to early Havana manifestations in Illinois. The preferred site location during this period appears to be low riverine terraces and flood plains. At the same time, the distinctive cord-wrapped-paddled and trailed line-decorated, sub-conoidal pottery of the Fox Lake series (Anfinson 1979b) appear in southwestern Minnesota. A radiocarbon date of 2050 ± 80 B.P. has been attained at 21 LN 2 (Hudak 1976:4). It is possible that Fox Lake ceramics may have arisen from a Marion Thick ancestry. The stone tool assemblage includes small stemmed and notched projectile points. While no sound subsistence data are available in southeastern Minnesota, excavations at a number of major Fox Lake sites in southwestern Minnesota suggest that subsistence remained diffuse with the use of bison, fish, turtles, muskrat, and other resources (Hudak 1974; Anfinson 1977, 1981; Shane 1978) which indicates little change from the Archaic subsistence system. No burial mounds have been directly associated with either of these cultural phases.

South-central Minnesota and the study area lie midway between the general ranges of the two cultural phases described above and may have been subject to influences from each although neither is known from the Mankato area.

Surveys and excavations by Professor Richard Strachan of Mankato State University at site 21 BE 33 at the mouth of the Blue Earth River and at several sites in the vicinity of Swan Lake fifteen miles to the northwest have reportedly yielded complex stamped ceramics which may be related to the Middle Woodland "Havana-related" wares of southeastern Minnesota, northeastern Iowa, and Illinois.

The recent surveys of the Statewide Archaeological Survey and the Science Museum of Minnesota have yielded ceramics from lake shores, river terraces, and flood plain localities within the Blue Earth River basin which appear to be of both Fox Lake and possibly Havana-related stamped forms. This suggests that the Blue Earth basin may have fallen within the overlapping ranges of two co-influence spheres as modeled by Syms (1977) during the Middle Woodland. It is entirely possible that other influences may be felt in the area from the north during this period via the Minnesota River valley.

During the transition to the Late Woodland period in southern Minnesota following ca. A.D. 800, ceramics of the cord wrapped rod impressed Onamia sub-conoidal type and related Lake Benton wares to the west (Anfinson 1979b) are seen across southwestern and south-central Minnesota. Again, little information is available from excavated contexts regarding the subsistence of the period but habitation sites are located widely on lake shores, stream terraces, and flood plains. Burial mounds are definitely associated with this cultural phase and are generally located on terraces, uplands, and vantage points adjacent to bodies of water. It appears that notched triangular projectile points are common in the stone tool assemblage. Few excavated sites are known in south-central Minnesota although several collections have been made during the course of the Statewide and Science Museum surveys within the Blue Earth basin in recent years. Most sites assignable to the time range appear to remain small and temporary in nature and little major change in lifestyle from the preceding cultural traditions is apparent.

Late Prehistoric Period

Although Late Woodland cultures of the Lake Benton phase may last until as late as A.D. 1200 in southwestern Minnesota (Anfinson 1981:36), a major change in subsistence and material culture about A.D. 900 marks the beginning of the final prehistoric period in south-central and southeastern Minnesota.

Oneota/Plains Village Traditions, A.D. 900 - A.D. 1700

Between about A.D. 800 and A.D. 1000 a series of cultural changes took place which may have ultimately originated in the early phases of the state-

level Mississippian cultural center of Cahokia at present-day East St. Louis, Illinois. During this period, major "Mississippian" influences including maize agriculture, globular shell tempered pottery with curvilinear designs, and small notched and unnotched triangular projectile points were transmitted up the Mississippi valley as far as Minnesota (Gibbon 1974). This Mississippian influence, possibly upon a Woodland cultural base, resulted in the formation of Oneota cultures at the periphery. The Blue Earth phase of the central Blue Earth River valley in southern Blue Earth and northern Faribault Counties is such an Oneota complex. The Blue Earth phase is characterized by smoothed, globular, shell tempered ceramics with handles and predominantly rectilinear design on broad shoulders. Small notched and unnotched stone projectile points, scapula hoes, ground stone tools and bone tools are associated. The presence of bell-shaped storage pits and scapula hoes as well as some preserved corn kernels indicates a maize agricultural subsistence base (Gibbon 1972). The major sites generally recognized as the type sites of the Blue Earth phase are the Humphrey Site, 21 FA 1, and the Vosburg Site, 21 FA 2 (Wilford 1945b, 1952), near Winnebago, Minnesota, although two vast site complexes comprising more than seventy Blue Earth sites have been identified along the central section of the Blue Earth valley by Clark Dobbs of the University of Minnesota, Orrin Shane of the Science Museum of Minnesota, and Ted Lofstrom of the Statewide Archaeological Survey of the Minnesota Historical Society.

At approximately the same time (ca. A.D. 800 - A.D. 1000) a series of very similar cultural influences were being spread into western Minnesota via the Missouri River. In the Missouri River area this agricultural transition with associated globular ceramics, triangular projectile points, and scapula hoes marks the beginning of the Plains Village Tradition. It appears that these influences spread from South Dakota down the Minnesota River, almost as far as Mankato. The large Cambria Village Site, 21 BE 2 (Wilford 1945a, Knudson 1967, Watrall 1968, 1974), approximately twelve miles northwest of Mankato, is the type site of the Cambria "focus" originally defined by Wilford (1941, 1955). While the Cambria Site and related sites exhibit a mixture of Woodland, Mississippian, and Plains Village characteristics, it appears that the Plains Village relationships predominate. The primary difference between the Cambria phase and Blue Earth phase lies in

the grit tempering and mixed rectilinear and curvilinear trailed designs with twisted cord impressions in the Cambria ceramic assemblage.

Major agricultural villages of both the Cambria and Blue Earth phases are located on stream terraces in south-central Minnesota but minor and limited use sites are located in flood plains, on lake shores, and islands. Cambria burial mounds have been identified but the Blue Earth burial mode appears to be in non-mound cemeteries. Subsistence in both the Cambria and Blue Earth phases appears to be based on maize cultivation and bison hunting, although a more accurate view may be available when ongoing doctoral research on the Blue Earth phase is completed by Clark Dobbs of the University of Minnesota. Recent surveys within the Blue Earth River basin have indicated that the Blue Earth phase appears to be restricted to the upper and middle reaches of the Blue Earth valley while Cambria phase artifacts appear only within the lower segment of the valley.

The latest phases of the Late Prehistoric Period are poorly understood in south-central Minnesota. No radiocarbon dates after about A.D. 1200 are available for sites of the Cambria phase (Lass 1980), while dates from Blue Earth Oneota sites range from A.D. 930 to A.D. 1640 (Henning 1970:168-170) and suggest persistence until the period of early European contact, perhaps in the form of the historic Chiwere Siouan Oto. Although no associations of European trade goods have been found in Minnesota Blue Earth sites to confirm this historical relationship, such associations have been reported in northern Iowa (Tatum 1979). Historical associations have also been defined for the related Orr Oneota groups of southeastern Minnesota which appear to be ancestral to the historic Oto.

In summary, the archaeological record indicates that prehistoric hunter-gatherers and agriculturalists occupied south-central Minnesota for up to eleven thousand years. The primary settlement loci appear to have been adjacent to lakes and rivers with the densest distribution of habitation and burial sites occurring in the flood plain, along terraces, and at the upland margins adjacent to the Blue Earth and Minnesota rivers. Although no prehistoric archaeological resources have been previously recorded within the study areas for the Mankato Flood Control highway bridge modifications, the reconstructed culture historical regional settlement patterns suggest that there is a high probability that the river terraces transected by the study areas may have hosted occupation or at least limited use for resource exploitation during the prehistoric period.

Continued analysis of recent survey and excavation data from the Blue Earth River valley by the Statewide Archaeological Survey, the Science Museum of Minnesota, and the University of Minnesota may add considerable insight into the culture history of the region.

Historic Period In South-Central Minnesota

Historic Indians -

The earliest record of the early Historic Indians of southern Minnesota results from the experiences of Father Louis Hennepin in southeastern Minnesota and the Mille Lacs Lake area. Hennepin's reconstruction of the Indian groups of the time places the Chiwere Siouan Oto and Iowa in south-central and southeastern Minnesota, respectively, while placing Iowa and Wahpeton groups near the mouth of the Minnesota River and Cheyenne and Teton bands on the upper Minnesota. This reconstruction is largely speculative, however, since Hennepin never personally entered the Minnesota River country.

More detailed, firsthand information about indigenous Indian populations is available in the observations of Pierre Charles Le Sueur from his exploration and fur trading activities in the upper Mississippi River country between A.D. 1683 and 1701. Le Sueur's transcribed observations on the ethnography of the Minnesota River valley have been summarized by Wedel (1974) and Johnson et al. (1981). In 1700 the lower Minnesota River was the domain of the eastern "Santee" Dakota whose major villages were located near Mille Lacs Lake but hunted along the Minnesota. The middle and upper reaches of the Minnesota River appear to have been the realm of the western Dakota occupied by the Yankton and Teton, respectively. The period was one of conflict and change, however, with continual conflict between the Dakota and their Algonquin neighbors, the Ojibwa, Miami, Fox, Sauk, and Potawatami as well as among themselves. The Mankato area appears to have fallen under Yankton hegemony, although village sites were transitory and thus, too, may have been the areas of influence. Evidence of the variety of Dakota groups present in the vicinity of the "Big Bend" of the Minnesota River may be seen in the observations of Le Sueur that during the year 1700-1701 he met at Fort L'Huillier with members of Sisseton, Wahpeton and Mdewakanton bands of the Santee Sioux as well as Yankton and Teton

representatives. The Iowa and Oto were still apparently present in southern Minnesota although Le Sueur described them as dominated by the better armed eastern Sioux.

During this period, the eastern Dakota were characterized by Le Sueur as non-agricultural peoples subsisting on bison and other game supplemented by maple sugar and large quantities of wild rice (Wedel 1974:170). He described the western Dakota as having no horticulture and gathering no rice but living "only by the hunt, roaming the prairies and the plains between the Missouri and the Upper Mississippi Rivers" (Wedel 1974:165).

In response to the pressure of the Ojibwa advance into northern and central Minnesota during the late seventeenth and early eighteenth century, considerable realignment of territories had taken place and by 1834 the entire Minnesota River valley was occupied by bands of the Santee Dakota (Pond 1908). Most records of Historic Indian settlements indicate that the occupants frequently left their villages during much of the spring, summer, and fall on hunting forays and in search of seasonal resources, reoccupying the village for the winter. Most villages were located within the flood plains or on low terraces of major waterways.

Little information is available regarding actual sites of Historic Indian villages in the Mankato area. The only references which were discovered were Le Sueur's reference (in Wedel 1974:170) to villages established in the winter of 1700-1701 near Fort L'Huillier on the Blue Earth River by bands of Yankton and Wahpekute and Keating's (1825:170) to villages established in the winter of 1700-1701 near Fort L'Huillier on the Blue Earth River by bands of Yankton and Wahpekute and Keating's (1825:326) reference to a Sisseton village at the mouth of the Blue Earth River based apparently on informant data since Long's expedition, of which he was a part, never came closer than fifteen miles away from that locality.

Thus, although no Historic Indian village sites are known to exist in the project study areas, village sites were recorded nearby in generally similar physiographic settings. There is, therefore, a possibility that such unrecorded Historic Indian occupation may have taken place within the study areas.

Pre-Settlement History -

As noted above, although French traders had surely entered the area

of the "Big Bend" of the Minnesota River during the seventeenth century, the first well-documented venture into the area of present-day Mankato was that of Pierre Charles Le Sueur in 1700. In 1699 Le Sueur began an expedition up the Mississippi from Biloxi on the Gulf Coast with the stated goal of the location and mining of a deposit of blue-green clay exposed in the Blue Earth and Le Sueur River valleys several miles southwest of present-day Mankato which was thought to contain a high percentage of copper ore. Arriving at the mouth of the Blue Earth River 10 October 1700, Le Sueur ascended the river and built a "fort" in which he and his men wintered, engaging in trade with the Dakota bands of the Minnesota River country. Le Sueur reportedly returned to the mouth of the Mississippi with a large quantity of the mined "ore," which proved to be worthless, in the spring of 1701 leaving a party to man Fort L'Huillier. The men of this party abandoned the fort in the spring of 1702 after Dakota-Fox rivalries threatened their continued peaceful existence.

The site traditionally ascribed to the Le Sueur's Fort Vert or Fort L'Huillier (Hughes 1908) lies atop a steep plateau at the mouth of the Le Sueur River in the NW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 26, T108N, R27W. Surface reconnaissance of this cultivated site by Fisk (1966) and surface reconnaissance and test excavation by Nystuen (1969) failed to yield any evidence of the French post. A reanalysis of the available French documents of the period by Wedel (1974) has indicated that Fort L'Huillier may have been built further downstream, approximately one and one-half miles above the mouth of the Blue Earth (Fig. 9). Intensive efforts have not been mounted to determine the exact location of Fort L'Huillier and it is possible that vestiges of the fort, the attendant Dakota villages, and a smaller fort Le Sueur reports as having built for the Indians may still exist. Although the Wedel reinterpretation suggests a location in Section 23, T108N, R27W approximately three-quarter miles upstream (southwest) of the proposed T.H. 169 bridge modification project area, there is a possibility that the exact location of Fort L'Huillier may be even farther downstream. Considering the local topography described in the Le Sueur journals, it appears improbable that L'Huillier could be as far downstream as the current T.H. 169 bridge study area but there is some possibility that at least part of the site may lie in an area that has been affected by earlier construction on the Le Hillier levee.

Following the abandonment of Le Sueur's Fort L'Huillier, it appears that the area saw little formal European influence for over fifty years. During this period, it is again probable that independent French and Canadian fur traders and possibly licensed traders of the North West Company may well have been present in the area though no formal record exists.

In 1766-67 Jonathan Carver, a British militia colonel, was commissioned by the commandant at Mackinac to travel among the Sioux of the Minnesota River to invite them to a peace conference. Although scholars differ on the credibility they attribute to the Carver journal and their interpretation of it, it appears that Carver ventured up the Minnesota River in 1766, perhaps as far as New Ulm, where he reportedly wintered with the Sisseton, returning in 1767. His account provides no useful information about the Mankato area.

Following the Louisiana Purchase in 1803, interest in the Minnesota River area increased. During the years that followed, the routine ventures of the British and American traders such as Thomas Anderson and Joseph Renville who plied the Minnesota River (Anderson 1882, Neill 1872) were supplemented by several expeditions commissioned by the United States Government to explore and map the Minnesota River and environs. These expeditions include those of Major Stephen Long in 1823 (Kane et al. 1978, Keating 1959), George W. Featherstonehaugh in 1835 (1970), and Jean N. Nicollet and General John C. Fremont in 1838. All of these expeditions provided information vital to the future of the area but provide little hard data regarding cultural resources in the Mankato area. As noted above, Keating (1959:356) made note of a possible Sisseton village at the mouth of the Blue Earth. Featherstonehaugh provides an interesting note (1970:303) regarding his failure to locate any remains of Fort L'Huillier in 1835 and his belief that the entire episode was a hoax.

During the 1830s and 1840s the Minnesota River fur trade flourished under the auspices of the American Fur Company with headquarters at Mendota (Gilman 1970).

Settlement History -

By 1850, the interest in the development of the Minnesota River had reached a high level at St. Paul. During that year four steamboats made

trips up the Minnesota River, with the "Anthony Wayne" making its way as far as the "Big Bend" at Mankato on July 18 (Hughes 1909:31). The signing of the Treaties of Mendota and Traverse des Sioux in 1851 ceding all Indian lands west of the Mississippi opened the way for the development of the Minnesota valley. It took little time for the land rush to reach the Mankato area as it was founded by Henry Jackson and Parsons Johnson February 5, 1852. During that month the first log cabin was built within the present limits of Mankato and the Blue Earth Settlement Claim Association was formed to promote the town (Hughes 1909:35). The town was named Mankato on the basis of Nicollet's observation that the indigenous Sioux applied the name Mahkato to the present Blue Earth River. In 1852 the town was surveyed and platted, a stone post office and hotel were erected, and regular steamboat service was initiated. The year 1853 was a boom year for Mankato with a steady influx of settlers and extensive construction within the "original townsite" near Main and Front Streets. During that year Captain Jesse Reno passed through Mankato while surveying the route for the military road from Mendota to the Big Sioux River (Singley 1974:39) and the town of South Bend was founded west of the Blue Earth River as Mankato continued to prosper. In 1854 a ferry was established at the steamboat landing in the area of Front and Main Streets (Neill 1882:20-27).

Construction of the military road from Mendota through Mankato, including the first bridge across the Blue Earth River just north of the present T.H. 169 crossing in 1855, further opened the area to settlement and insured the community's prosperity. Thus, the development of Mankato extends steadily from 1852 to the present day. The only other truly notable event is the community's involvement in the aftermath of the Sioux Uprising of 1862. Although Mankato had not been directly affected by the hostilities of the uprising, it became the site of the trial of Indians captured and implicated in the uprising which took the lives of many local settlers. Following the trial, 38 condemned Sioux Indians were hanged on a gallows erected at Front and Main Streets on 26 December 1862. The bodies were buried in a mass grave in the lowland adjacent to the Minnesota River bank but were dug up and removed overnight by curiosity seekers and physicians in need of cadavers for research.

Most of the early commercial development in Mankato took place during the 1850s-1880s and has left the standing structures of the "Mankato

Commercial District" which lies at the east end of the study area for the proposed T.H. 60-Main Street Bridge realignment which are currently under consideration by the State Historic Preservation Office. Much of the early development has been altered and re-altered by the ensuing 100 years of commercial development within the modern city of Mankato and few areas appear to exhibit archaeological potential.

The area of West Mankato and Le Hillier in which the T.H. 169 bridge modification project is located was subjected to the construction of a few well-spaced houses in the late nineteenth century and was subsequently densely developed during the twentieth century.

FIELD METHODS

The goal of the field survey of the proposed bridge alterations associated with the Mankato Flood Control Project was primarily the location and definition of archaeological resources since the above-ground historic-architectural resources had been previously investigated under U. S. Army Corps contract (Leviton 1980). Standing structures and sites recorded in that document were only reviewed briefly in the field to insure familiarity.

Trunk Highway 60-Main Street Bridge Relocation, Alternative 1CA

The entire proposed acquisition/construction zone for Alternative 1CA of the Main Street Bridge was subjected to pedestrian reconnaissance at less than 30 meter intervals 26 August 1981 by the author. This review revealed that the entire project area had been severely altered by previous construction and development. Although the documented regional prehistoric settlement pattern and the record of the historical development of the city of Mankato indicate that the project area once had considerable potential for the existence of cultural resource sites, local survey conditions revealed little chance of their preservation.

The east one-half of the proposed realignment is located within the heart of the city of Mankato (Fig. 2) in Blue Earth County. This area was found to consist of the steep (ca. 60° slope) east bank of the Minnesota River which rises ca. 20 feet (6 meters) to the level of the alluvial terrace on which downtown Mankato is built at an elevation of ca. 780 feet above sea level. The steep bank reveals obvious indications of previous filling/stabilization due to the presence of visible concrete rubble and railroad tie fragments in the slopes. Since early historical records indicate that this area was originally low ground, it appears that considerable filling has taken place on the east bank of the Minnesota River in this vicinity. The edge of the terrace has also been severely altered by a railroad yard containing seven tracks paralleling the river bank. This rail yard has visibly disturbed the ground surface to a distance of ca. 100 feet (30 m) easterly of the river bank. Random soil samples taken with a 1" hand operated tube sampler within the rail yard revealed that grading

and/or filling had totally disturbed the local soils to the maximum sample depth of 1 meter. No natural soils were visible in any of the samples taken in this area.

East of the rail yard the proposed Main Street relocation corridor crosses a ca. 80 foot (24 meter) boulevard zone, consisting of concrete pads with mowed grass margins, which is the site of three modern pumping stations for the city sanitary and storm sewer system. These utility buildings were built within the last several years and their construction totally disturbed the terrain in this zone. Surface reconnaissance revealed that no test excavation was feasible in this segment of the proposed corridor.

Easterly from this point, the proposed alignment for T.H. 60 crosses in-place Mulberry Street with revised curved connections to 2nd Street. The minor revision of Mulberry Street continues easterly to Broad Street (Fig. 2). Surface reconnaissance of this area revealed that the entire proposed construction zone consisted of in-place streets, curbs, sidewalks, and parking lots. The entire project zone from the west side of Front Street to Broad Street was thus found to be totally inaccessible to routine archaeological survey.

The west one-half of the proposed Main Street Bridge relocation alignment is located in urban North Mankato in Nicollet County (Fig. 2). The steep, 20-foot (6 meter) west bank of the Minnesota River in the study corridor has been diked and riprapped and is crowned by a concrete flood wall. Surface reconnaissance revealed that there was no natural terrain remaining at the river bank. Westerly of the ca. 80-foot (24 meter) wide flood control feature, the proposed T.H. 60 alignment descends to the alluvial terrace level at an elevation of ca. 775 feet above sea level crossing a paved parking lot and then the lots occupied by three standing structures including the Century Club and Finnegan's Pub as recorded in the historic resource survey (Leviton 1980). The areas between the buildings consisted of paved alleys and sidewalks and were visibly disturbed and inaccessible for routine survey.

Westerly from this point the proposed alignment of T.H. 60 crosses in-place River Drive and the elevated road prism of in-place T.H. 169, connecting to in-place Belgrade Ave. just west of its junction with T.H. 169.

This zone has been severely altered by River Drive, the ca. 10-foot thick road grade of T.H. 169 and Belgrade Ave. Surface reconnaissance revealed that this area was totally disturbed and inaccessible to subsurface surveys.

On the west bank of the Minnesota River, Alternative 1CA also proposes the slight realignment of T.H. 169 and the construction of revised access ramps (Fig. 2). Surface reconnaissance revealed that the proposed realignment of T.H. 169 affects only an existing access road, in-place River Drive and an area altered by the Lindsay Sash factory. This area is totally disturbed. Surface reconnaissance at 30 meter intervals supplemented by soil sampling with a one-inch soil sampler revealed that the proposed west access ramp alignment is contained within right-of-way which has been altered previously by T.H. 169 construction and was thus seen to warrant no test excavation. The east access ramp crosses in-place T.H. 60 and follows the existing flood control levee south of proposed T.H. 60 and was thus seen to warrant no test excavation. Northerly of proposed T.H. 60, the proposed east access ramp crosses paved parking lots and then follows River Drive through a ca. 1940s and 1950s residential area along T.H. 169. The paved areas were inaccessible to subsurface survey and the residential zone was seen to be significantly altered by home construction, street and utility construction, and landscaping.

Thus, the entire proposed construction zone for the relocation of the T.H. 60-Main Street Bridge crossing of the Minnesota River was found to be disturbed by highway, street, and utility construction as well as commercial and residential construction and landscaping during the course of surface reconnaissance surveys for cultural resources 26 August 1981. Soil sampling at ca. 30 meter intervals with a one-inch hand tube sampler in all accessible areas revealed totally disturbed soil profiles throughout the project area. Therefore, no subsurface testing was felt to be warranted in the project area. Surface reconnaissance resulted in the observation of no archaeological artifacts or features within the project study area.

T.H. 169 Blue Earth River Crossing - Alternative 1C

The entire proposed construction/acquisition zone for the proposed alteration of the T.H. 169, Blue Earth River Bridge under Alternative 1C for the Mankato Flood Control Project was subjected to pedestrian recon-

naissance at 15 meter intervals or less by the author 27 August 1981. Although this reconnaissance revealed that ca. 95% of the proposed project area had been disturbed by previous highway, street, and levee construction as well as commercial and residential development, it served to define several areas which required subsurface test excavation for adequate survey. Such test excavations were felt to be warranted due to the high potential for the existence of prehistoric and historic cultural resources documented by the settlement/land use patterns defined by the project literature search.

The west one-half of the proposed T.H. 169 Blue Earth River crossing project lies on an alluvial terrace west of the Blue Earth River in the city of Le Hillier in Blue Earth County (Fig. 4) at an elevation of ca. 775-780 feet above sea level. The west bank of the Blue Earth River at the T.H. 169 crossing has been riprapped and is capped by a ca. 10 foot (3 meter) high earth dike which extends to ca. 160 feet (48 meters) west of the river bank. Although the proposed alteration to the T.H. 169 bridge crossing calls for a 60-foot (18 meter) southerly alignment shift, the area of the levee has been previously surveyed (Strachan and Roetzel 1975) and contains too much fill to warrant standard archaeological testing. Westerly of the Le Hillier levee, the proposed construction zone which extends 1300 feet (400 meters) to the west was found during surface reconnaissance to be generally confined to the previously disturbed existing right-of-way of T.H. 169 along its northern limits except in a small zone of existing right-of-way between the Le Hillier levee and McKenzie St. and in the block between Hawley St. and Wilson St. where a relocation of Main St. is proposed. These two areas were found during surface reconnaissance to lie outside the existing ditch cuts of T.H. 169 and showed no visible disturbance. Since both parcels had vegetation cover consisting of mowed grass with no surface visibility, these two parcels were subjected to archaeological shovel test excavation at 15 meter intervals on 1 and 2 October 1981 by the author with totally negative results (Fig. 4). Shovel test profiles may be seen in Appendix C. All shovel tests were ca. 30 cm in diameter and soils were passed through 1/4" mesh.

The proposed construction limits for the southwestern quadrant of the T.H. 169 Blue Earth River crossing generally fall within the limits

of existing MnDOT right-of-way except in the area within ca. 300 feet (100 m) of the west bank of the Blue Earth River. In this area the proposed project limits extend to a distance of approximately 160 feet south of the present centerline of the eastbound roadway. This entails acquisition of approximately 60 feet (18 m) of additional right-of-way at the west bank of the river to allow the proposed 60-foot (18 m) southerly shift in the bridge locations. In this quadrant as in the northeast quadrant, the west bank of the Blue Earth River has been altered severely by the construction of a ca. 15-foot (4.5 m) high, 150-foot (45 m) wide earth dike with rock facing. The affected parcel along the southern right-of-way limits just west of the dike between stations 45 and 47 currently contains three residential structures. A surface review of this parcel 2 October 1981 revealed that all three standing structures have been placed on modern concrete block foundations although at least one of the structures appears to predate such technology. Since these residences do not appear on highway plan maps or aerial photographs from the 1930s, it appears that they were moved into this site during the 1940s. None of these structures have been deemed eligible to the National Register of Historic Places by the consultant (Leviton 1980) or the State Historic Preservation Office. Surface reconnaissance and soil sampling with a 1" tube sample at the right-of-way margin and between the houses within this parcel revealed that fill material consisting of almost pure buff sand, unlike the local silty loams, had been deposited in the area to a depth of at least one meter, apparently to act as a pad for the three residences in rather low terrain. Due to this filling, shovel testing was not considered to be feasible.

Between stations 37 and 43, the in-place T.H. 169 right-of-way expands in a series of steps from 100 feet (30 m) to 280 feet (85 m) south of the centerline of the in-place eastbound roadway. All proposed construction is to be confined within these right-of-way limits. Upon initial inspection, this right-of-way segment consisting of a grassy field with several scattered trees appeared to be generally undisturbed. However, close interval (ca. 5 m) surface reconnaissance 27 August 1981 revealed the existence of several minor depressions, a stone-lined pit (cistern?) and a thin scatter of twentieth century building hardware and debris in rodent burrow spoil. This surface data tended to confirm information obtained from a review

of T.H. 169 construction plans spanning the period 1928 to 1963 and aerial photographs from 1937 to the present. These sources indicated that T.H. 169 was constructed in a curving alignment across the southwestern quadrant of the present right-of-way (Fig. 4) in about 1930. This construction resulted in the removal of approximately six residences within the current right-of-way between stations 37 and 43. The affected structures appear to have been built between approximately 1900 and 1930. The southward curving alignment was abandoned when the present divided T.H. 169 roadway was constructed in the early 1960s and a slight scar is currently visible. To test the extent of terrain disturbance in this segment of right-of-way, a curving transect of shovel tests at 30 meter intervals was placed across the parcel (Fig. 4). Although shovel tests number 7 and 8 revealed a possible natural stratigraphy consisting of a 20 cm dark brown sandy "A" horizon and 20 to 30 cm brown silty sand "B" horizon overlying a buff "C" horizon of sand and gravel, no cultural materials were recovered. The remainder of the shovel tests encountered mixed disturbed soils consisting of sand, silt, and clay which in several instances contained bituminous and concrete chunks and twentieth century building and occupation debris including window glass, wire nails, and tin can fragments. These deposits were clearly related to the clearing of the MnDOT right-of-way of standing structures for highway 169 realignment during the 1930s and suggested that virtually the entire parcel had been disturbed to a degree which precluded the preservation of in situ archaeological data. No cultural materials except twentieth century debris were recovered in the course of surveys of the southwest quadrant of the Blue Earth River crossing.

The eastern one-half of proposed Alternative 1C for the T.H. 169 Blue Earth River bridges in West Mankato calls for a 60-foot (18 meter) southerly relocation at the east shore of the river with minor widening of the existing T.H. 169 alignment and addition of exit ramps which will require additional right-of-way beyond the current 100-foot (30 meter) limits (Fig. 3).

The northeast quadrant of the Blue Earth crossing is located within the 780-foot alluvial terrace of the Minnesota River Valley. Although this terrace setting has been seen to possess at least modest potential for the existence of prehistoric and historic cultural resources, the proposed construction zone along the north edge of existing T.H. 169 in

this quadrant has been severely altered by previous highway, street, utility, commercial and residential construction. Surface reconnaissance 27 August 1981 revealed that proposed project limits along the western 1200 feet (360 m) of the north edge of this quadrant are confined to within 150 feet (45 m) of the in-place west bound centerline and thus are confined to the shoulders and ditches of T.H. 169 and in-place Minneopa Road which serves as a frontage road in this locality to provide access to Honeymead Inc. The construction of these roadways and associated utilities has completely disturbed the natural terrain in this area. Toward the eastern end of the project, between stations 63 and 69, however, there is a proposed realignment of Minneopa Road ca. 80 feet to the north for a short distance (Fig. 3). This proposed alignment intersects in-place Minneopa Road at each end and crosses in-place Woodland Avenue and West 6th Street. This small relocation also involves the lots occupied by a small commercial structure and a residence both dating to the twentieth century. Due to the minor extent of landscaped and sodded terrain not covered by buildings and roadways, no shovel testing was thought to be required in this locality.

The southeastern quadrant of the Blue Earth crossing revision calls for minor expansion of the present T.H. 169 corridor across the edge of the bedrock terrace which rises to an elevation of approximately 40 feet (12 m) above the present road along its present southern margin (Fig. 3). This rock terrace with thin soil mantle rises ca. 60 feet above the east shore of the Blue Earth River at an elevation of 820 feet above sea level.

The proposed project design under Alternative Alignment 1C calls for cutting of the northern face of the bedrock terrace edge ca. 20-30 feet (6-9 m) from the western terrace edge at the river to a point approximately 800 feet (240 m) east or between stations 51 and 59. Between stations 59 and 68, however, a detached exit ramp and city street relocation will require expansion of construction limits to ca. 240 feet (73 m) south of the east bound centerline of in-place T.H. 169 (Fig. 3). Surface reconnaissance of this quadrant 27 August 1981 revealed that all lands at the foot of the existing bedrock cut had been totally disturbed by construction of the east bound roadway for T.H. 169 in the early 1960s. The upper terrace within the project area is located within a dense residential area of Mankato which was primarily developed between the 1920s and 1950s, although a few residences pre- and post-date that era. Surface

reconnaissance at ca. 5 meter intervals was conducted over most of this quadrant 27 August 1981. This review revealed that no open soils were exposed anywhere within the proposed construction/acquisition zone and much of the upper terrace was disturbed by street and residential construction and landscaping. The current vegetation consists of sodded yards with deciduous trees in the breaks. In addition, the review of historical literature, early highway construction plans, and early aerial photographs indicated that at least the western 1000 feet (300 m) of the north edge of the bedrock terrace had been cut back approximately 30 feet (9 meters) during the construction of the second (eastbound) roadway for T.H. 169 in the early 1960s. This construction had truncated Charles Avenue and Blue Earth Avenue at the terrace cut and had resulted in the removal of approximately six residences which had been situated along the original terrace lip. No cultural sites or materials were recorded during the course of this August surface review. Due to uncertainty about the extent of disturbance of the natural terrain along the upper terrace by residential development and the high potential for the existence of prehistoric archaeological materials in this topographic setting documented in the literature search, shovel test excavation was felt to be warranted in this area. A further surface review at the east bank of the Blue Earth River was also required due to an inability to contact the private owner of the parcel adjacent to the present southern MnDOT right-of-way limits in this area during August.

Therefore, an additional review was conducted on the upper terrace in the southeast quadrant of the Blue Earth Crossing on 27 October 1981. At this time, permission was obtained from the landowner to extend the survey along the high river bank south of the MnDOT limits. A careful surface reconnaissance at ca. 1 meter intervals in this area resulted in the recovery of a collection of prehistoric lithic debris from this locality out of rodent spoil in a mowed lawn. Subsequent shovel test excavations near the proposed construction limits in a 15-meter transect (Fig. 3) resulted in recovery of lithic debris from four contiguous units (16-19) which were used to define the limits of site 21 BE 63. Additional shovel tests near the terrace edge (20-24) placed at 15-meter intervals in areas which were not visibly disturbed by residential and street construction all resulted in

the location of disturbed soil stratigraphy which revealed that the project area was too disturbed to warrant further consideration. Although some twentieth century debris was located in shovel test 24, its context in an apparent 1930s or 1940s trash deposit argued against any judgment of significance.

The remainder of the southeast quadrant of the Blue Earth crossing project area was felt to be too disturbed by street and residential construction to require further survey efforts. Thus, site 21 BE 63 was the only cultural resource site defined during the course of the survey. Further information about this site is contained within the "Investigation Results" section of this report on Page 58.

LABORATORY METHODS

Due to the limited size and nature of the archaeological collections resulting from the 1981 surveys of the proposed Mankato Flood Control highway bridge modification study areas, the laboratory procedures applied were equally limited in scope. The only cultural materials gathered during the course of the survey were those located during surface reconnaissance and shovel test excavations at site 21 BE 63. The lithic artifacts from this site were hand washed, accessioned (MHS #156-36) and reviewed for retouch and use-wear with the aid of a binocular microscope and identified as to stone type, form, and function at the archaeological laboratory of the Minnesota Historical Society. Although several small items of twentieth century debris (1 square cut nail, 1 fragment window glass, 1 fragment sheet metal) were also curated in this collection, they were not subjected to any differential analytic or conservation procedures due to their recent origin. These collections are curated at the Minnesota Historical Society Archaeology Department in the Fort Snelling History Center in St. Paul.

All project plans, supporting data, field notes and photographs (Roll TH 81-ED-12, #1-36; Roll TH 81-PX-3, #1-36; Roll TH 82-PX-1 #8-13) are filed within the 1981 records of the Minnesota Trunk Highway Archaeological Reconnaissance Survey at the Archaeology Department of the Minnesota Historical Society, Fort Snelling History Center, and are available for study by scholars conducting related research.

INVESTIGATION RESULTS

Phase I archaeological reconnaissance surveys of the proposed rights-of-way for modifications to the T.H. 60-Main Street Bridge over the Minnesota River (Alternative 1CA) and the T.H. 169-Blue Earth River Bridge (Alternative 1C) as part of the Mankato Flood Control Project, resulted in the definition of only one archaeological site, the Graeber Site (21 BE 63). The project study areas were found to lie predominantly within urban areas which had been severely altered by highway, street, railroad, residential, and commercial construction as well as by clearing for urban renewal and previous phases of levee and floodwall construction.

The T.H. 60-Main Street study area was found to be completely altered by these activities and totally inaccessible to routine surface reconnaissance and shovel testing. Although no extant archaeological resources were defined during the course of this survey, the record search revealed that the proposed acquisition/construction zone for Alternative 1CA was located within the center of the original townsite of Mankato, an area which has been documented to have formerly contained residential and commercial structures spanning the entire period from 1852 when Mankato was founded into the twentieth century. No standing structures or surface features attributable to early phases of this development were located during the course of the survey. This area was found to lie within a totally commercial zone and no natural terrain was located which could be feasibly subjected to shovel testing for buried historic archaeological features or artifact deposits due to the almost total coverage of the study area by concrete and bituminous streets, alleys, parking lots, and sidewalks in addition to the developed railroad yard at the river bank. Although this downtown Mankato segment of Alternative 1CA yielded negative surface evidence and was inaccessible to shovel test surveys, there is a possibility that buried nineteenth century archaeological features such as building foundations, privies, and trash deposits may remain buried beneath the modern surface construction. The nature and extent of disturbance of any buried archaeological deposits by the subsequent construction is unknown. Efforts to locate any vestiges of the 1850s steamboat landing or ferry crossing structures in the project area were totally negative. Surface

reconnaissance revealed that the Minnesota River banks have been altered by filling and flood control to such an extent that there was virtually no chance that such features could remain intact.

A combination of surface reconnaissance and shovel test excavation failed to yield any archaeological materials in the western one-half or in the northeast quadrant of the proposed T.H. 169-Blue Earth River crossing acquisition/construction zone. Surface reconnaissance and shovel test excavation within the southeast quadrant of this project area, however, revealed evidence of the one archaeological site defined within the entire study area.

SITE 21 BE 63, GRAEBER SITE

Field #81-7-1

SE $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Section 14, T108N, R27W

The western margin of the southeast quadrant of the T.H. 169-Blue Earth River bridge study area consists of a ca. 60-foot (18 meter) bedrock terrace with steep slopes to the Blue Earth River on the west and a shear rock cut face dropping ca. 40 feet (12 meters) to the level of in-place T.H. 169 on the north. The sloping western terrace margin is wooded, but the top of the terrace edge consists of the mowed lawn of the Graeber residence at 939 Charles Avenue. Surface reconnaissance of the terrace surface 27 August 1981 at 1 to 2 meter intervals resulted in the recovery of 51 pieces of prehistoric lithic debris from bare spots and rodent burrow spoil (Figs. 3, 10). Subsequent shovel test excavations along a single shovel test transect at 15 meter intervals ca. 10 meters south of the in-place T.H. 169 cyclone fence resulted in the recovery of an additional 44 pieces of lithic debris from four contiguous tests (Fig. 10). In addition to the stone materials, four fragments of twentieth century debris were also recovered. The shovel test excavations were made as small as possible (ca. 25 cm diameter) to avoid unnecessary site disturbance and were excavated in 10 cm arbitrary levels using a trowel. Shovel test profiles may be seen in Appendix "C" and an inventory of cultural materials segregated by provenience unit is contained in Appendix "D."

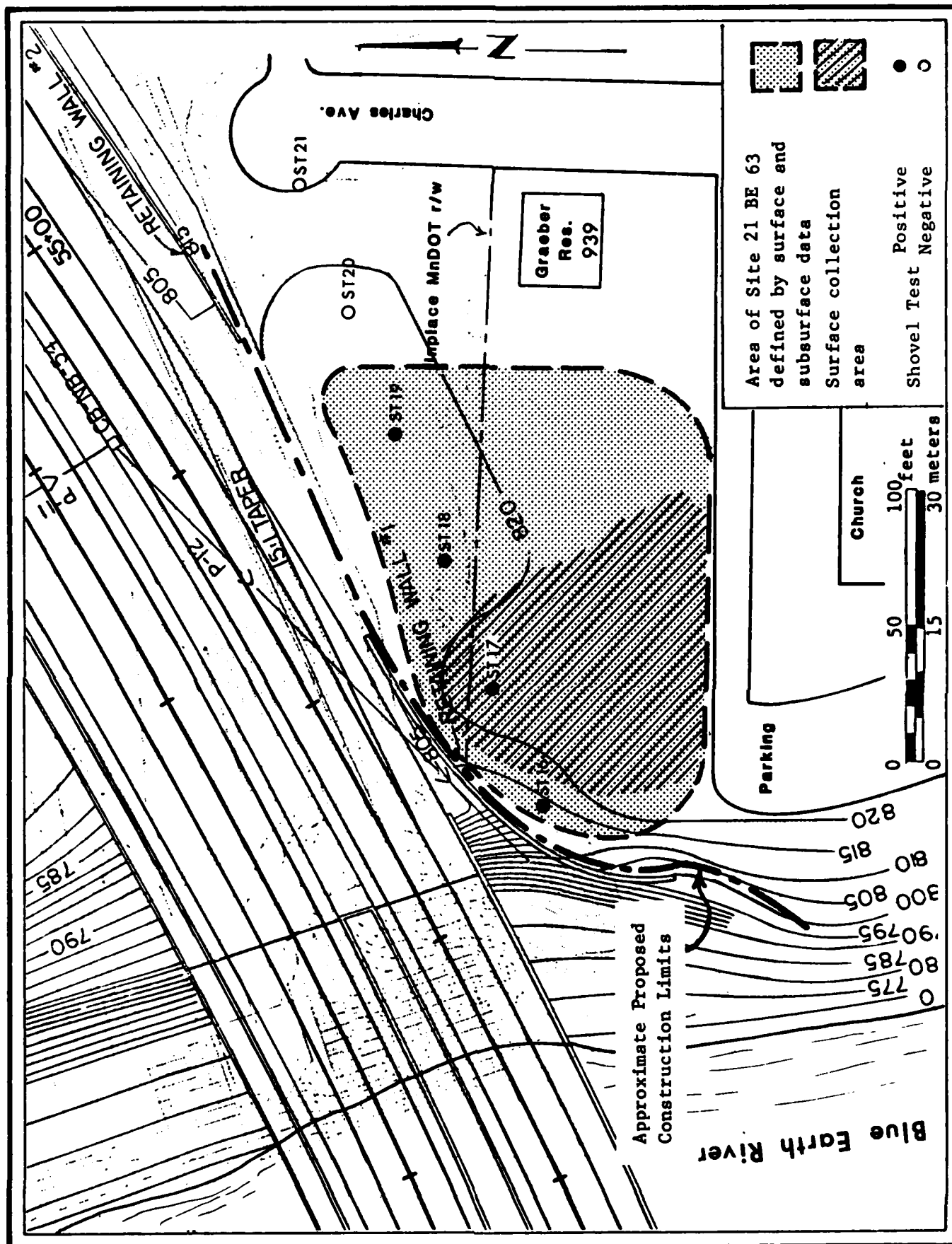


Figure 10. Site 21 BE 63 and relationship to proposed construction limits.

Although all surface collections were recovered from land in private ownership (Della Graeber, 939 Charles), the shovel testing revealed that the site extends northeast onto existing MnDOT right-of-way (Fig. 10). The terrace on which site 21BE63 is located consists of a slight ridge with an elevation of about 821 feet above sea level at the river bank with a slight depression (elevation 819) to the northeast, rising again above the 820-foot level near Charles Ave. There is little overt sign of terrain disturbance in the area designated as the site although the northern edge of the terrace has been visibly disturbed by the original cutting of the rock face during T.H. 169 revisions in the 1960s and the south edge of the general site area has been disturbed by the access road and parking lot of a church.

The shovel test excavations revealed that the homogeneous dark brown sandy loam (Copaston) soil directly overlay sandstone bedrock apparently belonging to the Jordan Formation at depths ranging from 30 to 60 cm. The cultural materials were densest between depths of approximately 10 and 25 cm. Shovel test #19 yielded lithic debris to a maximum depth of 45 cm but, this variation and the greater depth to bedrock appears to represent the introduction of ca. 20 cm deep fill material containing cultural material on top of the natural soil level. This may represent landscaping at the eastern limit of the site. Shovel tests east of #19 revealed severe disturbance which may be attributed to the removal of a residence in that locus during the 1960s highway construction. Other than in shovel test #19 no indications of terrain alteration or site disturbance were observed.

The 95 pieces of lithic debris from site 21BE63 include only one utilized waste flake, the remainder of the assemblage consisting completely of unmodified, unused stone waste flakes. Stone materials in the collection include oolitic chert (81), gray chert (6), granite chips (3), jasperoid chert (2), brown chalcedony (1), moss agate (1), and graywacke (1).

An analysis of the debitage nature and size revealed the following distribution:

Decortication Flakes:

Primary decortication, dorsal surface at least 90% cortex	2
Secondary decortication, dorsal surface less than 90% cortex	29

Non-cortex Flakes:

Length greater than 24 mm	3
Length 12-24 mm	25
Length less than 12 mm	33

Granite chips (may represent tool manufacture or fire-fracture)	3
	<hr/> 95

Although the investigations at site 21BE63 in the course of the present survey have been limited in nature and scope and the collections are small and possibly not representative, it is possible to present some observations on the possible nature of the site. It should be remembered that local disturbance of the site margins may have reduced the original site size and that the materials recovered in the limited area of the 1981 survey may represent specialized activities within a larger site or simply reflect other sampling biases.

The one tool recognized in the collection from site 21BE63 consists of a small oolitic waste flake with minor edge wear suggesting possible minimal use as a scraping tool. Such wear could result from tool manufacturing use or from other maintenance activities. The debitage consists of approximately 34% decortication flakes and 35% primary or secondary non-cortex flakes smaller than 12 mm. The combination of these forms suggests that the full process of tool manufacture may have been undertaken at this site rather than either just blank production or tool retouch. The stone materials utilized are predominated by oolitic and non-oolitic gray cherts (96%). Such cherts are reportedly available as lag deposits in the base of the Des Moines Till overlying the Oneota dolomite a short distance upstream within the Blue Earth River valley (Tim Ready, personal communication). The other poorly represented

stone types may be present in local gravels, or due to their small size, they may represent retouch of transported tools. Fire-cracked rock was not observed. On the basis of these data, it is possible that site 21 BE 63 may represent a short-term limited-use site at which locally available stone resources were reduced to finished tools. Considering the placement of the site overlooking the Blue Earth River valley, it could have served as a game or defensive overlook at which the tool manufacture took place. The total lack of diagnostic tools or ceramics precludes the placement of the site in time or definition of its occupants' cultural relationships. This site type appears to be compatible with high terrace and upland sites located upstream in the Blue Earth River valley (Orrin Shane, personal communication).

Site 21 BE 63 appears to lie outside the zone of direct impact of the construction under the current design for the T.H. 169-Blue Earth River Bridge modification (Fig. 10) but may be included within the zone of right-of-way acquisition. The definition of apparently undisturbed natural terrain containing artifacts related to stone tool manufacturing indicates that site 21 BE 63 has potential for yielding significant information regarding the culture history, adaptive processes, and man-land relationships of the Mankato area.

No other archaeological sites or data were observed or recovered during the surveys of the proposed Mankato Flood Control highway bridge modification projects.

RECOMMENDATIONS

The literature search, records review, and archaeological reconnaissance of the proposed highway bridge modification study areas for the Mankato Flood Control Project have resulted in the definition of no historic or prehistoric archaeological sites which are on or potentially eligible for nomination to the National Register of Historic Places within the proposed direct impact zone for the project. These investigations have, however, defined two sensitive zones, including one potentially eligible prehistoric archaeological site (21BE63) outside the proposed construction limits but within possible acquisition boundaries, and the Original Mankato Townsite which was inaccessible to current testing due to recent development but which may contain historic archaeological data.

Site 21BE63 should not be directly affected by the proposed modification to the T.H. 169, Blue Earth River Bridge Alternative 1C, so long as construction is confined within the limits defined by preliminary design data dated 15 January 1982 (Fig. 10). It is recommended that all construction associated with the river bank/bedrock cut and retaining wall construction between north bound centerline stations 52+50 and 54 be conducted from beneath the terrace edge to insure that site 21BE63 is not compacted or directly disturbed by vehicular traffic. Efforts should be made to insure that bank slumping does not occur which would extend within the site limits. It appears that current right-of-way acquisition plans may include at least a part of site 21BE63 which is currently in private ownership. Such acquisition would have a potential beneficial impact on the site by extending the protection of state and/or federal antiquities laws to the site area within the right-of-way.

It is the opinion of the investigator that site 21BE63 may be potentially eligible for nomination to the National Register although the Phase I survey did not provide sufficient information to allow a formal determination. It is advised that the site be preserved, in situ, as presently planned, if possible. If evaluation of the site is deemed necessary due to an alteration in project construction limits or due to

potential indirect impacts through inclusion of the site within proposed acquisition limits, test excavation will be required. It is advised that any test excavations considered for the site be conducted within large excavation units to allow observation of the horizon patterning of the lithic debris at the site with the goal of interpretation of the lithic manufacturing techniques employed as well as other possible limited activities carried out at the site.

It is also recommended that further consideration be given the area of the Original Mankato Townsite which is potentially affected by proposed T.H. 60-Main Street bridge modification Alternative 1C. Although modern development within the city of Mankato has altered virtually the entire study area, the proposed project area on the east bank of the Minnesota River has been documented in the literature search to have been the center of the early development (1852-1890) of the city of Mankato. No significant standing structures or archaeological features were visible within the study area. However, the entire proposed corridor was inaccessible to subsurface testing using standard archaeological methods due to the presence of modern bituminous and concrete highways, streets, sidewalks, and parking lots as well as a railroad yard. It is therefore possible that archaeological architectural features, privies, trash deposits, and occupation debris related to the nineteenth century development of the Mankato residential and commercial district may remain intact beneath the modern alterations. If proposed construction is such that it will penetrate the levels of modern disturbance, such resources may be affected. While it does not appear feasible or cost-effective to test for such deposits using standard archaeological methods or augering, it is recommended that the potential for a "memorandum of agreement" be discussed with the State Historic Preservation Office staff during ongoing negotiations regarding known National Register and state inventory sites in the project area which would allow for field review of the project area during construction. Such monitoring, if deemed feasible, should be conducted to field check a predictive model of historical development based on the resource data available in the literature, including insurance maps from the 1880s,

tax records, etc. The goal of such a review should not be complete period artifact recovery, but should instead focus on the testing of the literature-based model of structural and non-structural developmental history within the city of Mankato. Such a review should not involve intensive archaeological excavation and should therefore not involve extensive project construction interruption. If undisturbed privy or trash deposits from the nineteenth century were discovered, an artifact sample could be extracted to provide a regional "type column" for the period. If construction is to take place under the auspices of the Minnesota Department of Transportation, such investigations could be conducted by the Trunk Highway Archaeologist of the Minnesota Historical Society. Provisions for such review could potentially be included within the special provisions of the construction contract and the investigations would probably not have to exceed the standard seventy two hour "down time" clause of the standard MnDOT construction contract.

No additional cultural resource surveys are recommended with the two bridge modification study areas, and no further consideration of cultural resources should be required other than in the two areas noted above.

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APPENDIX "A"

SCOPE OF WORK CULTURAL RESOURCES INVESTIGATION OF THE MANKATO HIGHWAY AND RAILROAD BRIDGE ALTERATIONS

1.00 INTRODUCTION

1.01 The State will make arrangements with the Minnesota Historical Society (MHS) in accordance with terms of Cooperative Agreement No. 55699, as supplemented, to complete the archaeological investigation(s) and report(s) in conjunction with the Mankato highway and railroad bridge alterations. (The MHS is hereinafter referred to as the Principal Investigator for the purposes of this Appendix B Scope of Work.) This cultural resources inventory is in partial fulfillment of the obligations of the St. Paul District regarding cultural resources, as set forth in the Historic Preservation Act of 1966 (P.L. 89-665), the National Environmental Policy Act of 1969 (P.L. 91-190), Executive Order 11593 for the Protection and Enhancement of the Cultural Environment (13 May 1971, 36 F.R. 8921), the Archaeological Conservation Act of 1974 (P.L. 93-291), the Advisory Council on Historic Preservation's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R., Part 800), the Department of the Interior's guidelines concerning cultural resources (36 C.F.R., Part 60), and Corps of Engineers Regulations (ER 1105-2-460) "Identification and Administration of Cultural Resources" (Federal Register, 3 April 1978).

1.02 The laws mentioned above establish the importance of Federal leadership, by the various responsible agencies, in locating and preserving cultural resources within project areas. Specific steps to comply with these laws, particularly as directed in P.L. 93-291 and E.O. 11593, are being taken by the Corps ". . . to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance." A part of that responsibility is to locate, inventory, and nominate to the Secretary of the Interior all such sites in the project area that appear to qualify for listing on the National Register of Historic Places.

1.03 The Executive Order further directs Federal agencies ". . . to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished or substantially altered." In addition, the Corps is directed to administer its policies, plans, and programs in such a way that federally and non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved and maintained for the inspiration and benefit of the people.

1.04 This cultural resources investigation will serve several functions. The report will be a planning tool to aid the Corps in meeting its obligations to preserve and protect our cultural heritage. It will be a comprehensive, scholarly document that not only fulfills federally mandated legal requirements but also serves as a scientific reference for future professional studies. It will identify sites which may require additional investigations and which may have potential for public use development. Thus, the content of the report must be analytical in nature, not just descriptive.

2.00 PROJECT DESCRIPTION

2.01 The City of Mankato is located in southcentral Minnesota at the confluence of the Blue Earth and Minnesota Rivers. The bridge alterations in the Mankato area on the Trunk Highway (TH) 60, TH 169, and Chicago and Northwestern Railroad (C&NWRR) bridges are part of an overall flood control project approved by Congress in 1958. The majority of this flood control project has been completed, with only the bridge alterations remaining.

2.02 The project areas include modifications to the following bridges:

- a. TH 60 - Main St. Bridge over the Minnesota River.
- b. TH 169 - Bridge over the Blue Earth River.
- c. C&NWRR - Bridge over the Blue Earth River.
- d. Designated borrow or disposal areas.

3.00 DEFINITIONS

3.01 For the purpose of this study, the cultural resources investigation will include a literature and records review, a Phase I on-the-ground reconnaissance level survey, and Phase II testing.

3.02 "Cultural resources" are defined to include any buildings, site, district, structure, object, data, or other material relating to the history, architecture, archaeology, or culture of an area.

3.03 "Literature search" is defined as an examination and review of written reports, books, articles, etc., published and unpublished, which are pertinent to the cultural resources investigation to be carried out for a particular project. The purpose of the literature search is to familiarize the Contractor with the cultural history of the study area and past investigations which have been carried out in the area, and to provide this information in a summarized form to the agency requesting the search. While the existing data could be extensive, the literature search should be as comprehensive as possible in providing a usable body of data for the purposes outlined above.

3.04 "Records review" is defined as the examination and review of records, files, etc., which are maintained by various local and State agencies. The purpose of the records review is to document the location of known sites which may exist within the project area, their condition, the extent of past work undertaken at the site, and any other information which may be relevant in assessing the significance of the site.

3.05 "Phase I cultural resources survey" is defined as an intensive, on-the-ground survey and testing of an area sufficient to determine the number and extent of the resources present and their relationship to project features. A Phase I cultural resources survey will result in data adequate to assess the general nature of the sites present; a recommendation for additional testing of those resources which, in the professional opinion of the Principal Investigator, may provide important cultural and scientific information; and detailed time and cost estimates for Phase II testing.

3.06 "Phase II testing" is defined as the intensive testing of those sites which may provide important cultural and scientific information. Phase II testing will result in data adequate to determine the eligibility of the resource for inclusion on the National Register of Historic Places, a plan for the satisfactory mitigation of eligible sites which will be directly or indirectly impacted, and detailed time and cost estimates for mitigation.

4.00 STUDY AREA

4.01 The literature search and records review will be concerned with the prehistoric and historic archaeological resources within the alignments and disposal and borrow areas designated on the inclosed maps.

4.02 The Phase I surveys will be conducted in the following areas (refer to the inclosed maps for more detail):

- a. TH 169 Bridge Alternate 1C (Plate A-5, A-6).
- b. Main Street Bridge Alternate 1AA (Plate A-3).
- c. C&NWRR Bridge Alternate 3B (Plate A-5, A-6, A-7).

4.03 Phase II testing will be conducted on those sites found within the above three alignments that may provide important cultural and scientific information.

4.04 The disposal areas and borrow pits will be identified at a later date. It is not required that these areas be included in the present survey and report. However, as the proposed areas are identified, each location should be evaluated for archaeological potential. Those areas found to have potential should then be subject to Phase I survey and Phase II testing as necessary. A report of these investigations should be forwarded to the St. Paul District, Corps of Engineers, upon completion.

5.00 PERFORMANCE SPECIFICATIONS

5.01 The Principal Investigator will utilize a systematic, interdisciplinary approach in conducting the study. The Principal Investigator will provide specialized knowledge and skills during the course of the study to include expertise in archaeology and other social and natural sciences as required. Personnel involved with the work under this contract must meet the minimum professional qualifications outlined in Appendix C.

5.02 The extent and character of the work to be accomplished will be subject to the general supervision, direction, control, and approval of the Contracting Officer.

5.03 Techniques and methodologies used during the investigation shall be representative of the current state of knowledge for their respective disciplines.

5.04 The Principal Investigator shall keep standard field records which shall include, but not be limited to, field notebooks, site survey forms, field maps, and photographs.

5.05 The tested areas will be returned as closely as practical to presurvey conditions.

5.06 The recommended professional treatment of recovered materials is curation and storage of the artifacts at an institution that can properly insure their preservation and that will make them available for research and public view. If such materials are not in Federal ownership, the consent of the owner must be obtained, in accordance with applicable law, concerning the disposition of the materials after completion of the report. The Principal Investigator will be responsible for making curatorial arrangements for any collections which are obtained. Such arrangements must be coordinated with the appropriate officials of Minnesota and approved by the Contracting Officer.

5.07 Should it become necessary in the performance of the work and services, the Principal Investigator shall, at no cost to the Government, secure the rights of ingress and egress on properties not owned or controlled by the Government. The Principal Investigator shall secure the consent of the owner, his representative, or agent, in writing, prior to effecting entry on such property. If requested, a letter of introduction, signed by the District Engineer, can be provided to explain the project purposes and request the cooperation of landowners. Where a landowner denies permission for survey, the Principal Investigator shall immediately notify the Contracting Officer and shall describe the extent of the property to be excluded from the survey.

5.08 When sites are not wholly contained within the right-of-way limits, the Principal Investigator shall survey an area outside the right-of-way limits large enough to include the entire site within the survey area. This procedure shall be done in an effort to delineate site boundaries and to determine the degree to which the site will be impacted.

Literature Search

5.09 Information and data for the literature search and record review will be obtained from, but not limited to, the following sources:

a. Published and unpublished reports and documents such as books, journals, theses, dissertations, manuscripts, newspapers, W.P.A. reports, surveyors' maps and notes, early atlases, and missionary records.

b. Site files and other information held at the Minnesota Historical Society Archaeology Department, libraries, and archives; the State Archaeologist's Office; the University of Minnesota Department of Anthropology and libraries; and materials available from the County Historical Society and other local historical societies.

c. The Principal Investigator will obtain from the State Historic Preservation Office information regarding any cultural resources in the project area that have been nominated or are being considered for nomination to the National Register of Historic Places.

d. Consultation with other professionals familiar with cultural resources in the area.

e. Consultations with amateur archaeologists and individuals concerned with local history in order to locate sites and to identify and define local interests and resources perceived to be locally significant.

5.10 A study and evaluation of previous archaeological and historical studies of the region, including the date, extent, and adequacy of the past work as it reflects on the interpretation of what has been done in the area should be undertaken and summarized in the report.

5.11 The literature search should include a listing of all sites (historic and prehistoric) identified during the course of the study and an evaluation of the impact upon them from the proposed project.

Phase I Survey

5.12 The on-the-ground examination will be a reconnaissance level survey and shovel testing of the area of sufficient intensity to determine the number and extent of cultural resources present. This includes prehistoric and historical archaeological resources.

5.13 An attempt will be made to locate all resources previously recorded that are located in the project area and that may be impacted by the proposed project and to report their condition.

5.14 The survey shall include surface inspection in areas where surface visibility permits adequate recovery of cultural materials and subsurface testing where surface visibility is limited. Subsurface investigation may include test pits, corings, or cut bank profiles where appropriate.

5.15 The recommended grid or transect interval is 15 meters (50 feet). However, this interval may vary depending upon field conditions. If the recommended interval is not used, justification should be presented for selection of an alternate interval. All tests will be screened through 1/4-inch mesh.

Phase II Testing

5.16 Phase II testing will be undertaken by the Principal Investigator on those site areas located during the Phase I survey that will be impacted by the proposed construction.

5.17 The Principal Investigator will test the proposed project areas sufficiently to determine the existence of cultural materials and/or features and if present, their condition (in situ or disturbed), and the horizontal and vertical distribution of the remains. If a site or sites are present in the proposed impact areas, an evaluation of cultural affiliation and recommendation will be made as to the significance of the remains according to the National Register of Historic Places criteria. Sufficient documentation will be submitted for the St. Paul District and State Historic Preservation Officer to make a determination as to the eligibility of any sites to the National Register of Historic Places.

5.18 The Principal Investigator will recommend appropriate mitigative measures, including time and cost estimates, where warranted.

5.19 All testing will employ standard archaeological techniques, including formal test pits. All material will be screened through 1/4-inch wire mesh.

6.00 GENERAL REPORT REQUIREMENTS

6.01 Upon completion of field work, the Principal Investigator will submit to the Contracting Officer a brief report detailing the work accomplished. Upon completion of all field investigations and research, the Principal Investigator shall prepare a technical report detailing the work done, the results, and the recommendations for mitigation and associated time and cost estimates for those resources found to have potential for the National Register.

6.02 The technical report shall include, but not be limited to, the following sections. These sections do not necessarily need to be discrete sections; however, they should be readily discernable to the reader.

a. Title page: The title page should provide the following information: the type of survey undertaken (reconnaissance, intensive) the cultural resources assessed (archaeological, historical, architectural); the project name and location (county and State); the date of the report; the Contractor's name; the contract number; the name of the author(s) and/or the Principal Investigator; the signature of the Principal Investigator; and the agency for which the report is being prepared.

b. Administrative Summary: The summary will be a synopsis of the report defining the project area and the level of the cultural resources investigation. It shall summarize the research objectives and problems, methods, numbers, and types of resources identified, the significant recommendations and any unusual or innovative findings or techniques developed during the course of the investigation. Because this information will serve both as an administrative summary and as a portion of that information required by the Department of the Interior for its annual report to Congress (pursuant to Section 5.c. of the Reservoir Salvage Act as amended), the summary should be as detailed and succinct as possible. Normally, the summary will not exceed one typewritten page.

c. Table of Contents.

d. Introduction: This section should include the purpose of the report; a description of the proposed project; the location of the proposed project, including a map of the general area; and a project map (a list of USGS Quadrangle maps which cover the project area should also be included); and the dates during which the field survey was conducted. The introduction shall also contain the name of the institution where recovered materials will be curated.

e. Environmental Setting: This section should contain a brief description of the environment of the study area, both present and past conditions, and it should be of a length commensurate with other sections of supporting type information.

f. Literature Search: This section should detail the sources used for the literature search and records review as well as a description of all information encountered. Bibliographic information should also be included at the end of the report.

AD-A143 953

PHASE ONE CULTURAL RESOURCE SURVEY OF PROPOSED TRUNK
HIGHWAY 60 & 169 BRI. (U) MINNESOTA HISTORICAL SOCIETY
ST PAUL L D PETERSON 06 OCT 82 DACW37-80-C-0060

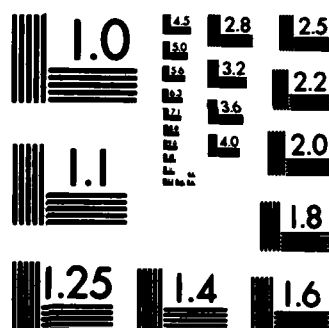
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

g. Field Methods: This section should give an explicit statement of the surveying and survey methods and rationale. It should describe the areas which were surveyed (types of ground cover, degree of surface visibility, etc.) whether or not the survey resulted in the location of any cultural resources, the methods used to survey the area (pedestrian reconnaissance, subsurface test, etc.) the rationale for eliminating uninvestigated areas, the estimated size of the investigated sample and its relationship to the sample universe (e.g., 100 acres representing 15 percent of the project impact area), and the grid or transect interval used. Testing methods should include descriptions of test units (size, intervals, depth) and the rationale behind their placement.

h. Laboratory Methods: This section should explain in detail the laboratory methods employed and the rationale behind the method selected. This section should also contain references to accession numbers used for all collections, photographs and field notes obtained during the study, and the location where they are permanently housed.

i. Summary of Regional Prehistory and History: This section should discuss the regional cultural developments in their spatial and chronological position.

j. Investigation Results: This section should describe the prehistoric and historic archaeological resources encountered, including the size of the site: type of site (i.e., historic dwelling, prehistoric village, mound group, etc.); the cultural component(s) of the site (if discernable); and the general nature of the site as it existed at the time of the survey. An inventory of cultural material recovered from sites may be included in this section or added to the site survey forms. Accession numbers for collected cultural material should be included as a part of the inventory. Inventoried sites shall include a site number. Official site designations assigned by an appropriate State agency are preferred. However, if temporary site numbers will be used in either the draft or final reports, they shall be substantially different from the official site designations to avoid confusion or duplication of site numbers.

k. Recommendations: This section should discuss the direct and indirect impacts that the proposed project will have on the cultural resources. For those sites which were tested, the Principal Investigator shall make recommendations for the adequate mitigation of those sites considered to have potential for eligibility to the National Register of Historic Places. Recommendations should outline a range of alternative measures which may adequately mitigate the sites under consideration (e.g., data recovery, avoidance, structural solutions for particular problems such as erosion or wave action, etc.). The recommendations should include a time and cost estimate for the suggested mitigative measures. If it is the State's assessment that no significant archaeological resources exist in the project areas, the methods of investigation and reasoning which support that conclusion will be presented. If certain areas are not accessible to testing, recommendations will be made for future consideration. If it is found that significant archaeological resources do exist in the area, the report will describe the materials which were recovered and where they were located, and will assess the extent and potential significance of materials remaining in the ground. Any evidence of cultural materials or features which have been previously disturbed or destroyed will be presented and explained.

l. References: All reference must follow American Antiquity format.

m. Appendix: This section should contain the Scope of Work and the resumes of the Principal Investigator and crew.

n. All sites identified in the course of the study, including find spots and known sites, will be presented on State site forms. Data should also be provided about the present condition of the sites (disturbance by natural or manmade processes) and content of any collections from the sites.

o. The location of all sites and other features discussed in the text will be shown on 8½ X 11 inch legibly photocopied USGS map sections and be bound into the report. Project maps shall also be included as part of contract correspondence showing the relationship of sites to the project areas. Maps should also show the type of survey method employed for each area surveyed (example, pedestrian walkover, shovel tests) and formal test pits, if applicable. All maps will be labeled with a description, a north arrow, a scale bar, township and range (on USGS maps only) and the map source (e.g., the USGS quad name or published source).

7.00 FORMAT SPECIFICATIONS

7.01 Text materials will be typed (single-spaced or space-and-a-half) on good quality bond paper, 8.5 inches by 11.0 inches, with a 1.5-inch binding margin on the left, 1-inch margins on the top and right, and a 1.5-inch margin at the bottom. The report will be printed on both sides of the paper.

7.02 Information will be presented in textual, tabular, and graphic forms, whichever is most appropriate, effective, or advantageous to communicate the necessary information.

7.03 All figures must be readily reproducible by standard xerographic equipment.

7.04 Negatives of all black and white photographs contained in the final report must be included so that copies for distribution can be made.

8.00 SUBMITTALS

8.01 The Principal Investigator will submit reports according to the following schedules:

a. Brief Field Report: The original and one copy will be submitted upon completion of field work.

b. Draft Final Report: The original and six copies will be submitted 213 calendar days after contract award. The Contracting Officer will provide the Principal Investigator with comments on this draft report.

c. Revised Final Report: The original and 15 copies will be submitted 303 calendar days after contract award. This final report will include appropriate revisions in response to the Contracting Officer's comments.

8.02 Neither the State nor the Principal Investigator shall release any sketch, photograph, report, or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer prior to the acceptance of the final report by the Government.

APPENDIX "B"

VITAE

NAME: LESLIE D. PETERSON

BIRTHDATE & PLACE: August 26, 1948; Anoka, Minnesota

MARITAL STATUS: Married, Two children

EDUCATION: Bachelor of Arts Degree
Major: Anthropology
University of Minnesota, 1970

Master of Arts course work completed, thesis in progress
Major: Anthropology
University of Minnesota, 1975 - present
Thesis topic: "Controlled Data Collection Techniques In
Archaeological Survey"
Degree Expected: 1982

SOPA QUALIFICATION: Application to the Society of Professional Archaeologists
accepted for qualification in the areas of Field Research
and Cultural Resource Management by letter of 22 September
1978 and SOPA Newsletter of February 1979.

MAJOR ARCHAEOLOGICAL FIELD EXPERIENCE:

June-July 1970	Field Crew Member University of Minnesota Field School - Excavation of 21 KC 3 & 21 KC 4, Woodland habitations and mound, Koochiching County, Minnesota. James Stoltzman, University of Wisc., principal investigator.
Oct.-Nov. 1970	Field Assistant Minnesota Historical Society Northwest Company Wintering Post Excavation (History) Pine County, Minnesota Douglas Birk, Field Director
Nov. 1970- Apr. 1971	Laboratory Assistant Minnesota Historical Society Grand Portage Site (Historic) Collections Research Alan R. Woolworth, Principal Investigator
Apr. 1971- Dec. 1972	Assistant Archaeologist Minnesota Trunk Highway Archaeological Survey Minnesota Historical Society David W. Nystuen, Field Director
Jan. 1973- Present	Field Director Minnesota Trunk Highway Archaeological Survey Minnesota Historical Society

In addition to the above research, experience has also been gained through voluntary participation and assistance in numerous surveys and excavations of both historic and prehistoric archaeological data throughout Minnesota.

MAJOR REPORTS & PUBLICATIONS:

- 1971 "The Archaeological Salvage of the Greenbush Borrow Pit Site 21 RO 11" with David W. Nystuen, Minnesota Historical Society and Minnesota Department of Transportation.
- 1973 "An Early Prehistoric Stone Workshop Site in Northwestern Minnesota," The Minnesota Archaeologist, Vol. 32, No. 3 & 4.
- 1974 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1973, Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- 1975 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1974, Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- 1976 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1975, Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- 1977 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1976, Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- 1978 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1977, Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- 1979 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1978, (with Terry J. Pfutzenreuter) Minnesota Historical Society and the Minnesota Department of Transportation, St. Paul.
- "Minnesota's Highway Archaeological Programs," The Minnesota Archaeologist, Vol. 38, No. 2 with Scott F. Anfinson.
- "Blue Earth Ceramics" in "A Handbook of Minnesota Prehistoric Ceramics" Minnesota Archaeological Society Occasional Publications in Minnesota Anthropology No. 5, Scott Anfinson, Ed.
- 1980 The Minnesota Trunk Highway Archaeological Reconnaissance Survey: Annual Report - 1979, (with Terry J. Pfutzenreuter) Minnesota Historical Society and Minnesota Department of Transportation, St. Paul.

MAJOR PAPERS & ADDRESSES:

- 1973 "Recent Developments in the Minnesota Highway Archaeological Survey," paper presented to the Minnesota Archaeological Society Meeting, November 1973.
- 1974 "The Role of Historical and Archaeological Preservation in Minnesota's Highway Planning Process," paper presented at the Federal Highway Administration Environmental Workshop, Springfield, Illinois, April 1974.
- 1975 "The Minnesota Highway Archaeological Reconnaissance Survey," paper presented to the Sioux Archaeological Society meeting, April 20, 1975.
- 1976 "Minnesota's Archaeological Resources - A Cause For Concern" paper presented at the Annual Meeting of the Anoka County Historical Society, May 1976.

"The Minnesota Trunk Highway Archaeological Reconnaissance Survey: An Exercise in Cultural Resource Management," paper presented at the 34th Annual Plains Anthropological Conference, Minneapolis, October 1976.

In addition to the above, numerous minor lectures and slide talks have been presented to agencies, schools, and organizations.

- 1978 "The Application of Controlled Surface Collection Methods In Archaeological Survey and Assessment," paper presented at the Third Annual Council For Minnesota Archaeology Symposium on Minnesota Archaeology, Hamline University, St. Paul, Minnesota, May 13, 1978.

PROFESSIONAL MEMBERSHIPS & SUBSCRIPTIONS:

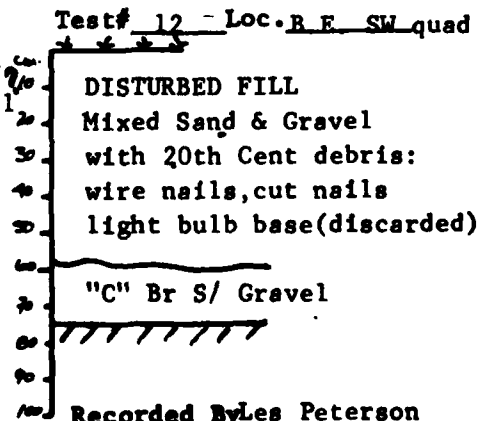
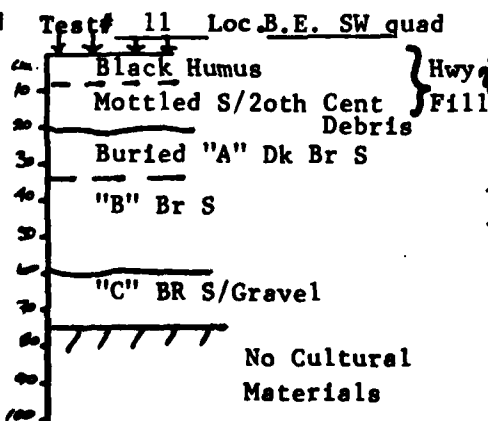
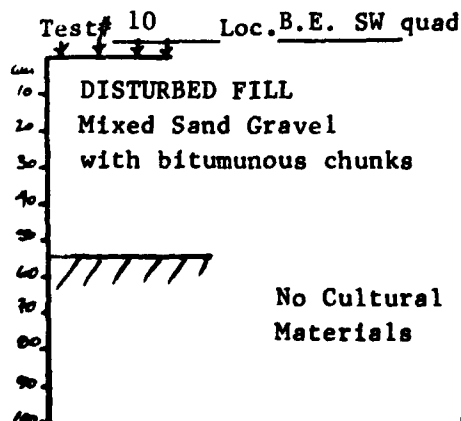
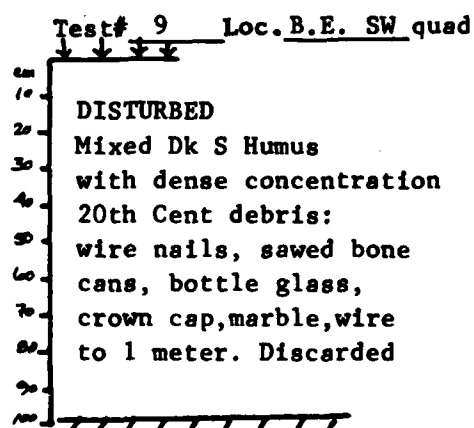
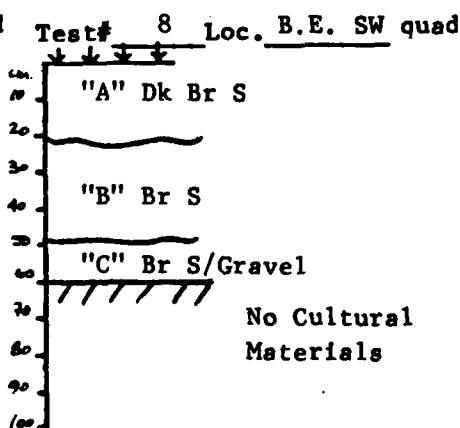
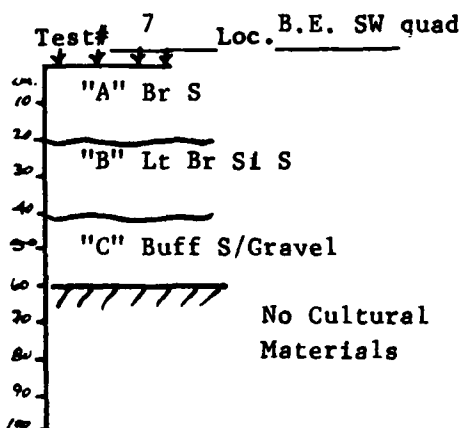
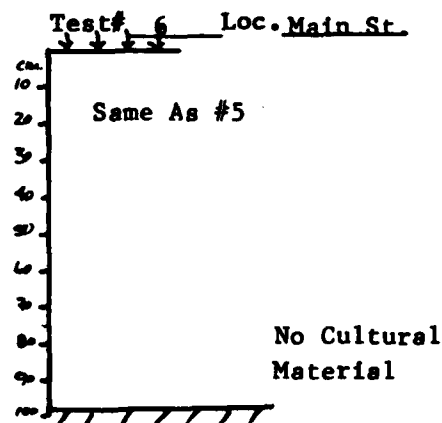
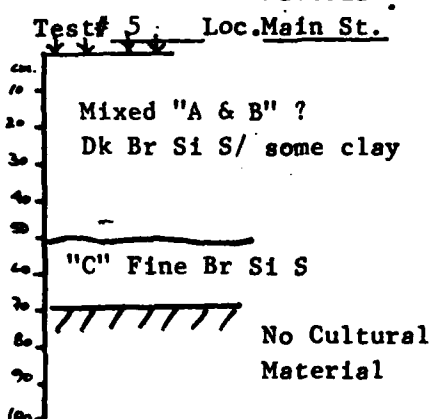
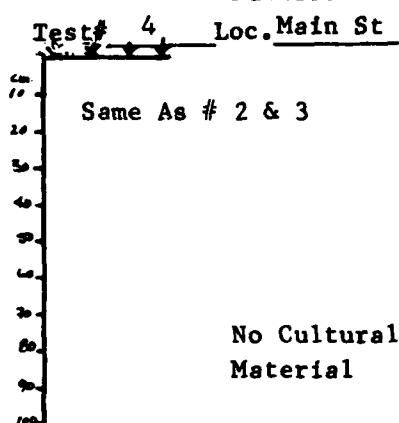
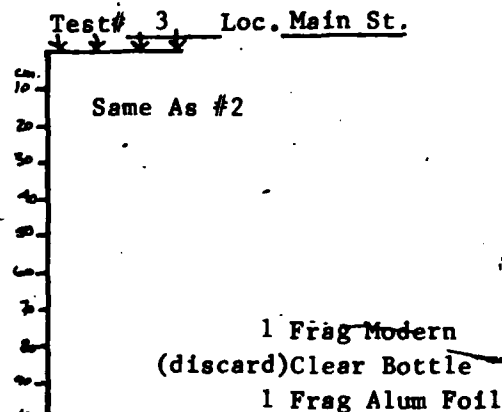
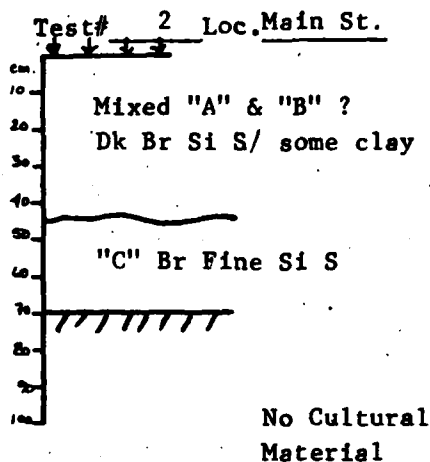
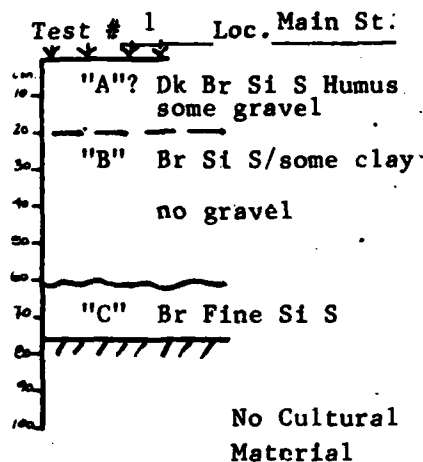
Council For Minnesota Archaeology
Mid-Continental Journal of Archaeology
Minnesota Archaeological Society
Plains Anthropologist
Society of American Archaeology
Society of Historical Archaeology
North American Archaeologist

MAJOR PROFESSIONAL INTERESTS:

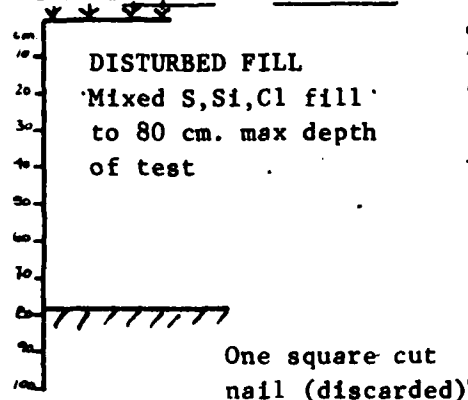
Western Great Lakes Anthropology & Archaeology
Archaeological Survey Design & Methodology
Regional Cultural Resource Management

HONORARY APPOINTMENTS & OFFICES:

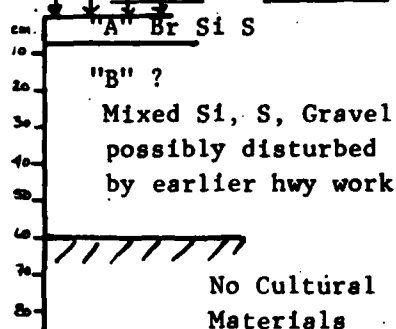
Editor, Council For Minnesota Archaeology 1976-1979.

Recorded By Les PetersonDate 1/2 October 1981

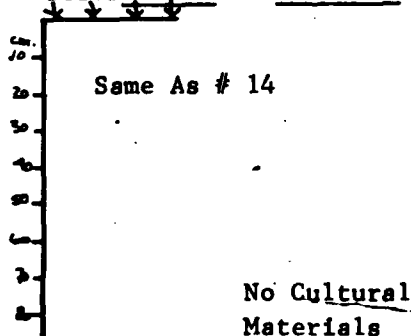
Test # 13 Loc. B.E. SW quad



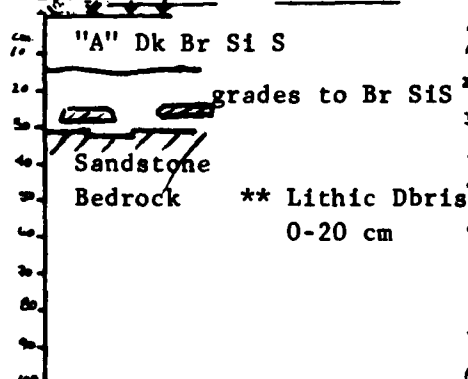
Test # 14 Loc. B.E. NW quad



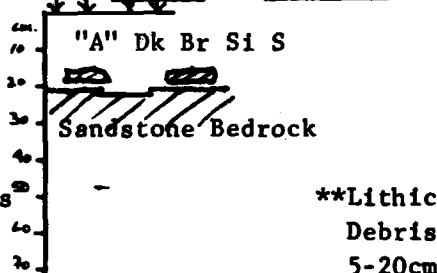
Test # 15 Loc. B.E. NW quad



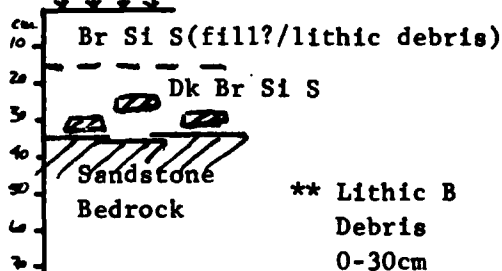
Test # 16 Loc. B.E. SE quad



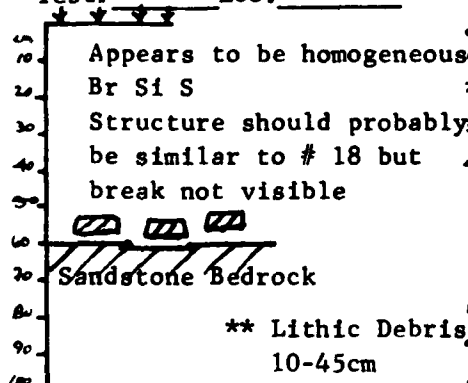
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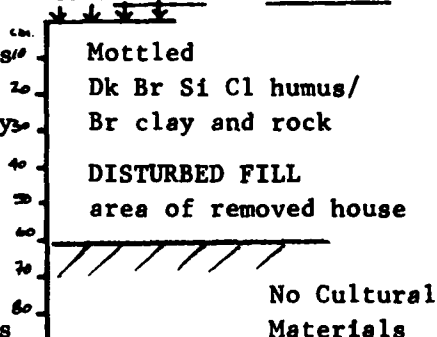
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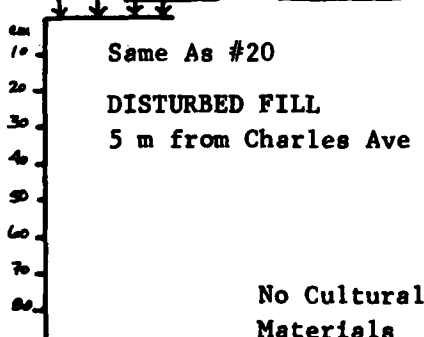
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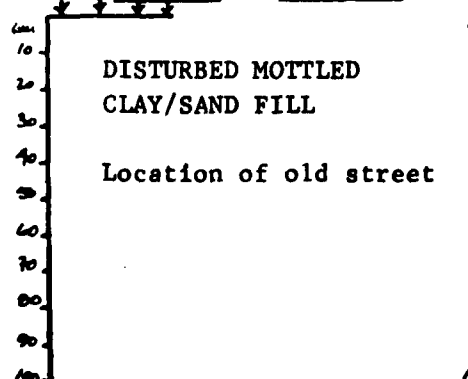
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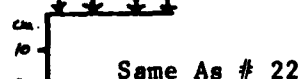
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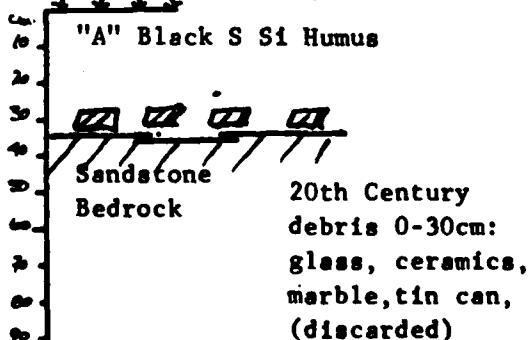
Test # 22 Loc. B.E. SE quad



Test # 23 Loc. B.E. SE quad



Test # 24 Loc. B.E. SE quad



Recorded By Les Peterson

Date 27 October 1981

APPENDIX "D"

MHS ARCHAEOLOGY CATALOGUE

Cataloger _____ Accession Number 156-36Date _____ Site Name GraeberSite Number 21BE63

CATALOG NO.	QTY	DESCRIPTION
		Surface Collection
156-36-1	1	Lt. gray oolitic chert scraper/punch (worked on one edge and around a point)
156-36-2	1	pale brown oolitic chert retouch or small trim flake
156-36-3	1	yellowish-brown oolitic chert, primary decortication waste flake
156-36-4	1	gray oolitic chert, primary decortication waste flake
156-36-5-15	11	Lt. gray to gray oolitic chert, secondary decortication waste flakes
156-36-16-20	5	yellowish to reddish-brown oolitic chert, secondary decortication waste flakes
156-36-21	1	Lt. gray chert secondary decortication waste flake
156-36-22-33	12	Lt. gray to gray to brownish-gray oolitic chert secondary waste flake (L \geq 12 mm)
156-36-34-35	2	gray chert, secondary waste flake (L \geq 12 mm)
156-36-36	1	Lt. gray to gray oolitic chert, secondary waste flake (L < 12 mm)
156-36-37-48	12	Lt. gray to gray to brown oolitic chert, secondary waste flake (L - < 12 mm)
156-36-49	1	Lt. gray chert (no inclusions) secondary waste flake (L - < 12 mm)
156-36-50	1	brown chalcedony, secondary waste flake (L - < 12 mm)
156-36-51	1	granite, fire-cracked?
		Shovel Test #16
156-36-52-56	5	Yellowish to reddish-gray to gray oolitic chert, secondary decortication waste flakes
156-36-57-58	2	Lt. gray chert (no inclusions) secondary decortication waste flakes
156-36-59	1	Reddish-brown to gray oolitic chert secondary waste flake (L \geq 12 mm)
156-36-60-64	5	Reddish brown to gray oolitic chert secondary waste flakes (L < 12 mm)
156-36-65-66	2	Brownish-red chert secondary waste flakes (L < 12 mm)
156-36-67	1	Granite, fire-cracked?
156-36-68	1	Tin can or iron sheeting fragment
156-36-69-70	2	window pane glass fragment
		Shovel Test #17
156-36-71-72	2	Lt. grayish to yellowish-brown oolitic chert secondary waste flake (L - < 12 mm)
136-36-73	1	black silicified siltstone, secondary waste flake (L < 12 mm)

MHS ARCHAEOLOGY CATALOGUE

Cataloger _____ Accession Number 156-36

Date _____ Site Name Graeber

Site Number 21BE63

[illegible]

MINNESOTA STATE SITE FILE FORM

APPENDIX E

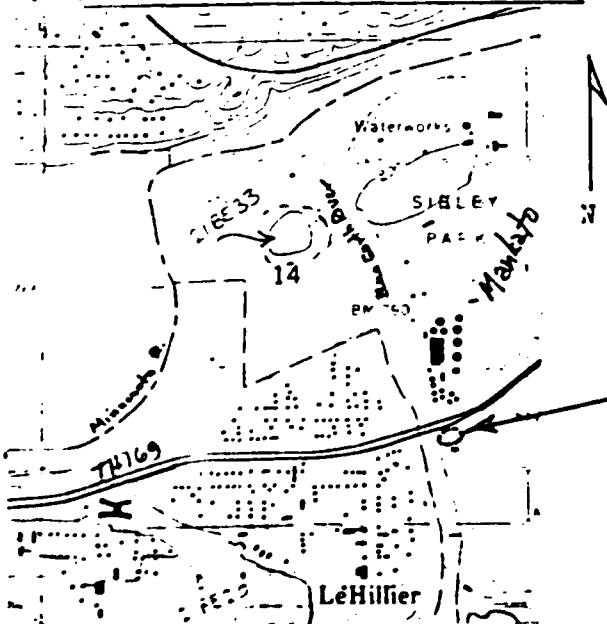
1.

All information requested here must be supplied if available. Additional data can be recorded on sheet 2 or by supplying copies of field forms.

MINNESOTA STATE SITE FILE

County Blue EarthProject MHS Trunk Highway ArchaeologySite # 21BE63Date of investigation 27 October 1981Site name Graeber SiteField # Trunk Hwy 81-7-1Type of site Lithic ScatterCultural affiliation UnknownLocation SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ SEC 14 T 108N R 27WVerbal Af edge of 60' terrace, overlooking TH 169 cut to North & Blue Earth R. to the West.Nearest water-direction-distance Blue Earth River, 40 m to West, 20 m. VerticalOwner/tenant- address Della Graeber, 939 Garles Ave., Mankato & MnDOT (North Edge)Informants/collections MHS Trunk Hwy Arch 1981Site description Lithic debris visible in exposed areas of residential lawn & in excavations.Present condition Ca. 30m diam. site core undisturbed. Probable N., E., & S. limits disturbed by TH 169 cut, residential landscaping and church parking lot.Excavations Transect of 4 troweled shovel tests at 15m interval 10m S. Hwy fence 27 Oct 81Repository MHS Trunk Hwy photo #s _____ accession #s MHS 156-36National Register status; unevaluated X evaluated _____ submitted _____ approved _____Written references 1981 Trunk Hwy Survey Annual Report, US Army Corps Flood Control Project
Survey Report for Bridge Alterations (MHS for MnDOT)USGS Quad Mankato West 7.5 1974Scale 1: 24,000Comments Located on TH 169 bridge alteration
survey by MHS for MnDOT in fulfillment of
Army Corps Flood Control planning contract.

Legend:

Recorded by Leslie D. PetersonInstitution MHS date 8 Jan 82

MINNESOTA STATE SITE FILE FORM

The information solicited here should be supplied if it is pertinent. Field reports may serve as supplements.

County Blue Earth Project Trunk Hwy Survey (MnDOT, Army Corps)

Site # ZIBE63 Date of investigation 27 Oct. 81

Site name Graeber Site Field # Trunk Hwy 81-7-1

UTM: A Center 1752 8932 B

C D

Best access to site Westerly 40 m from dead end Charles Ave. along S. edge MnDOT r/w.

Sites in vicinity 21 BE 33, 3/4 Mi. N. multicomprehist; 21 BE 20, 3/4 Mi. SW Prehist.

Lithic ?

Previous work in area Anfinson Co. Hwy. Survey Check 21 BE 20 1979; Mankato State U (Strachan) Survey of Army Corps Mankato Levees 1975; Roetzel 1981 survey Chic. NW RR Bridge alteration plan for Army Corps.

Site area/ dimensions ca. 30m X 40m

Disturbance-nature of Core undisturbed, present margins may be altered by TH 169 residential and church construction.

Elevation of site ca 820' of nearest water 760' B.E. River

Drainage system Blue Earth River

Topography At Margin of 60' River Warren erosional Terrace within Minn. River Trench

Vegetation Modern : residential lawn Reconstructed Contact Pd : Hardwood Forest

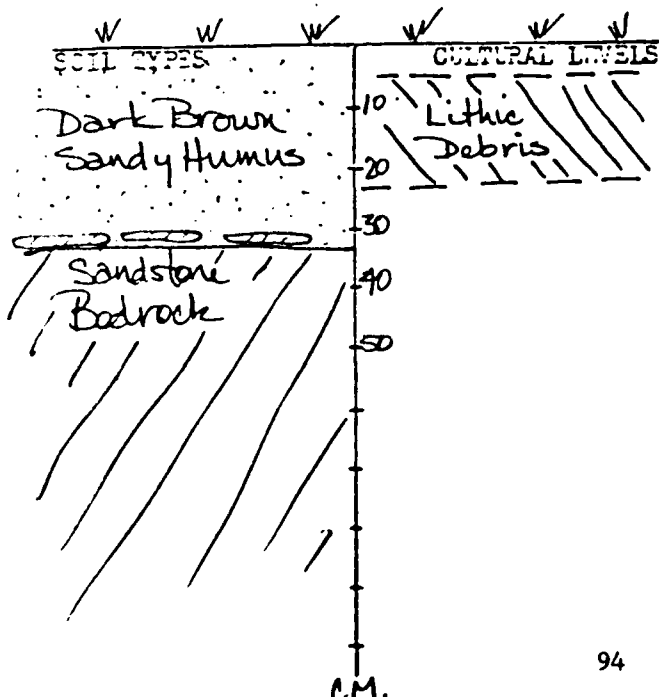
Soil types Shallow Sandy Loams overlying sedimentary bedrock

Region (geomorphic, biophysical) Minn. R. Valley/Blue Earth Till Plain Physio. Area (Wright 72 Big Woods Biocultural Area (DNR 1977))

Principal investigator, crew Peterson

SOIL PROFILE

Indicate typical cultural horizons and stratigraphy, scale



Nature and aim of investigation Impact assessment

proposed MnDOT /Corps alterations to TH 169

Blue Earth R. bridges and approaches.

Research potential Excellent

Artifacts recovered 52 waste flakes surface

43 waste flakes , 1 Quartzite knife frag from

4 positive shovel tests. Chert, chalced. Quartz &

quartzite. Primary & Secondary, little decortication

Recorded by Leslie D. Peterson

Institution MHS date 8 Jan 82

APPENDIX "F"

NATIONAL REGISTER SITES WITHIN THE CITY OF MANKATO
AS OF 16 FEBRUARY 1982

Federal Post Office & Courthouse	401 S. Second
First National Bank of Mankato	229 S. Front St.
R. D. Hubbard House	606 S. Broad St.
Blue Earth County Courthouse	Courthouse Square
J. R. Brandrup House	704 Byron
Charles Chapman House	418 McCauley
Lorin Cray House (YWCA)	603 S. Second
Adolph Olson Eberhart House	228 Clark St.
First Presbyterian Church	S. Broad St. & Hickory
William Irving House	320 Park Lane
Adam Jefferson House	West End Cleveland St.
Mankato Public Library	120 So. Broad St.
North Front Street Commercial District	301-415 N. Front St. (Odd #'s)
Oscar Schmidt House	111 Park Lane
Union Depot	112 Pike Street



Plate 1. Proposed Main Street Bridge Alignment - Centerline View East From East Bank Minnesota River.



Plate 2. Proposed Main Street Bridge Alignment - View North Across Corridor at East Bank of Minnesota River.



Plate 3. Proposed Main Street Bridge Alignment - Centerline View East From T.H. 169, North Mankato.



Plate 4. Proposed T.H. 169, Blue Earth Bridge - View East Along South Right-of-Way Limits Toward Blue Earth River.

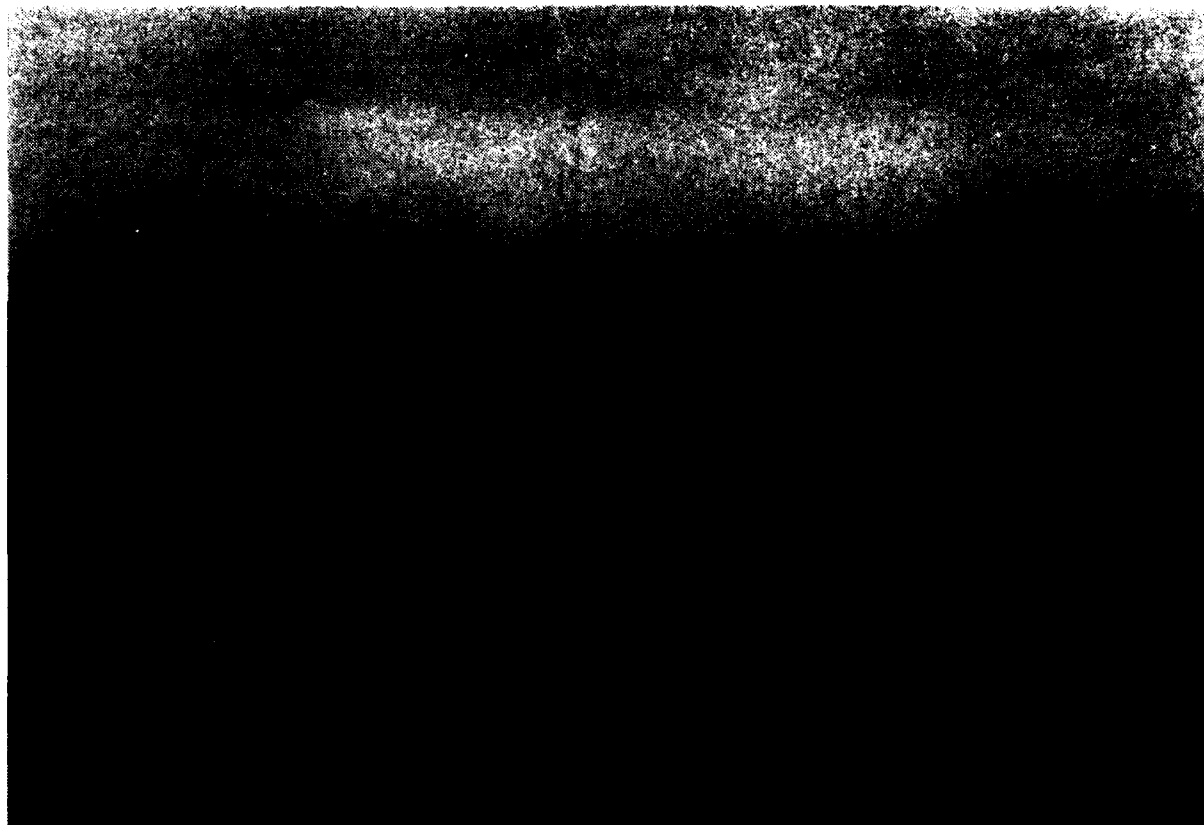


Plate 5. Proposed T.H. 169, Blue Earth Bridge - View North Along West Levee Across Alignment (21BE63 at right).



Plate 6. Proposed T.H. 169, Blue Earth Bridge - View East Across Blue Earth River Along South Right-of-Way Limit at Site 21BE63.



Plate 7. Proposed T.H. 169, Blue Earth Bridge - View Southwest Across T.H. 169 at Site 21BE63.



Plate 8. Proposed T.H. 169, Blue Earth Bridge - View East Across Site 21BE63 from Terrace Edge.

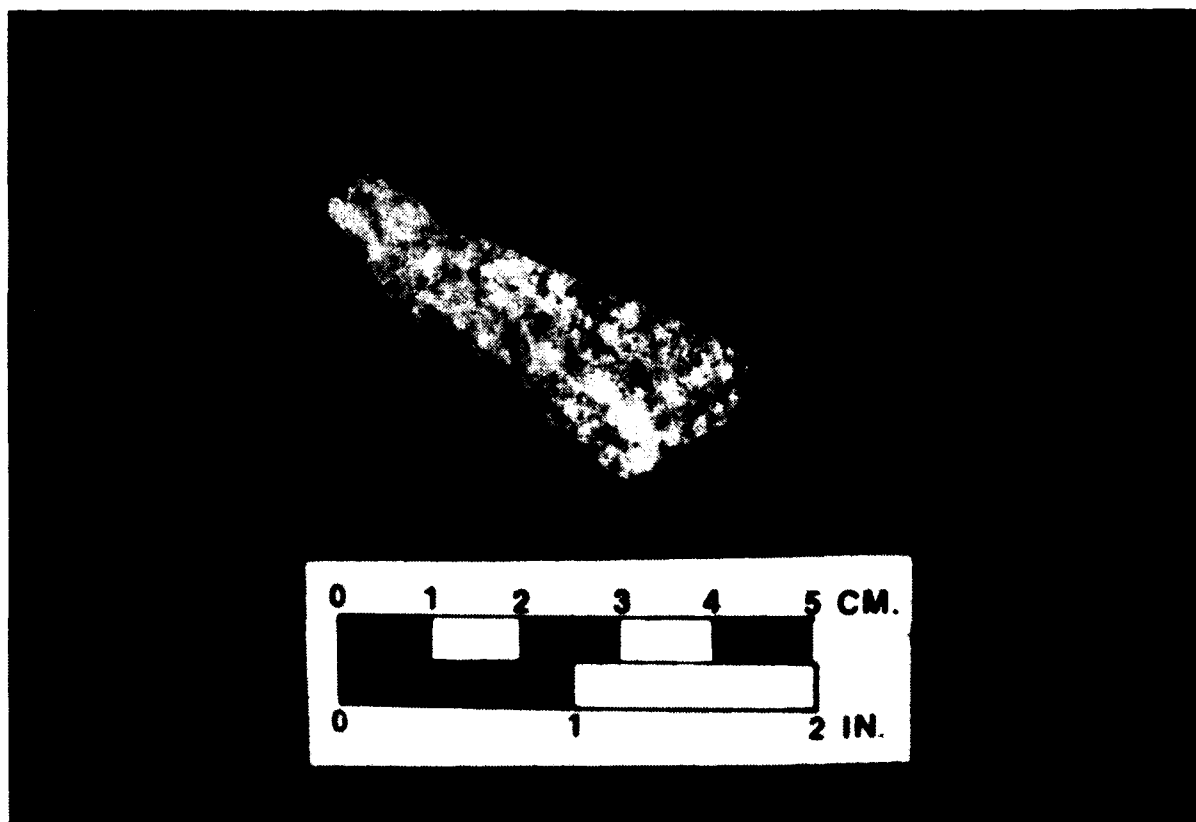


Plate 9. Site 21BE63, Retouched Chert Waste Flake.

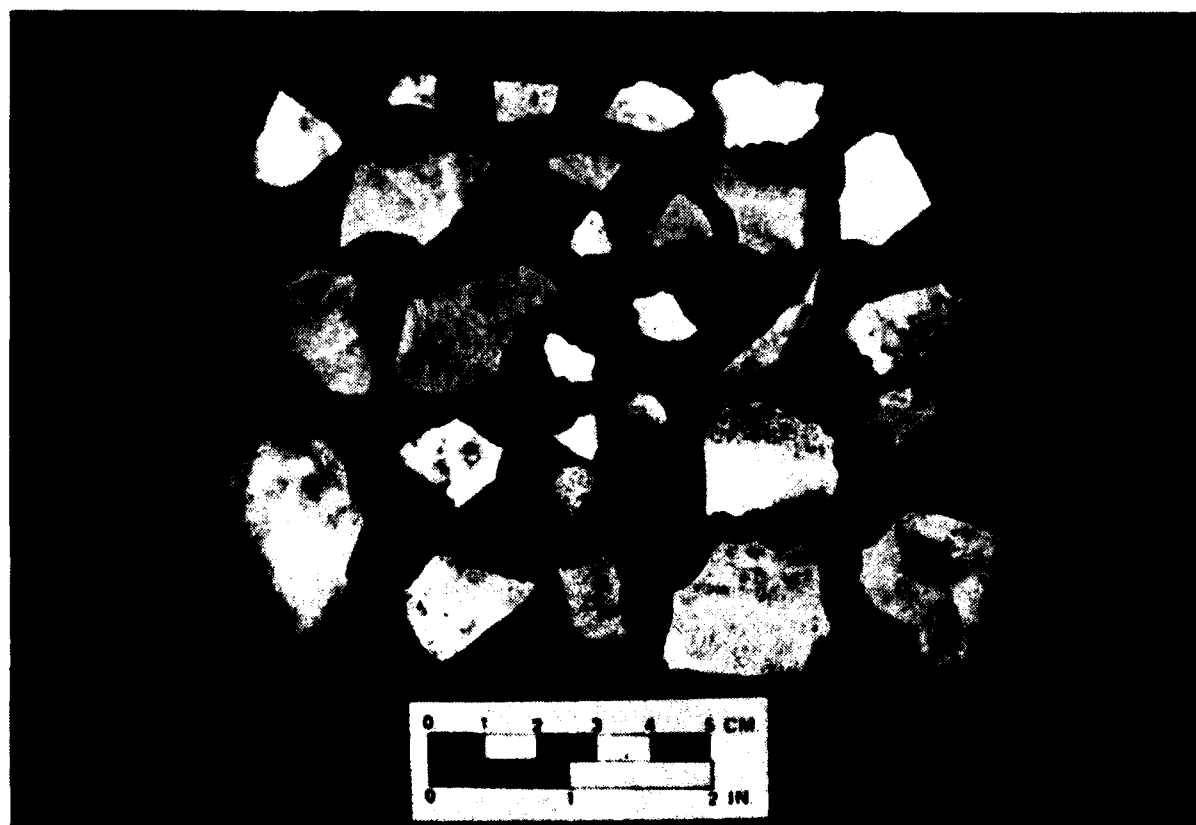


Plate 10. Site 21BE63, Sample of Stone Debitage.

END

FILMED